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AZ CORP COMMISSION
DOCKET CONTROL

2013 MAY 22 PM 2 33

Transcript Exhibit(s)

Docket #(s): W-01445A-12-0348

Arizona Corporation Commission

DOCKETED

MAY 22 2013

DOCKETED BY

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Exhibit #: A11-Section 4

Part 8 of 14. FOR PART 1 PLEASE SEE BARCODE 0000151150, FOR PART 2 SEE

BARCODE 0000151151, FOR PART 3 SEE BARCODE 0000151152, FOR PART 4 SEE

BARCODE 0000151153, FOR PART 5 SEE BARCODE 0000151154, FOR PART 6 SEE

BARCODE 000151155 FOR PART 7 PLEASE SEE BARCODE 0000151156, FOR PART

9 SEE 0000151158, FOR PART 10 SEE BARCODE 0000151159, FOR PART 11 SEE

BARCODE 0000151160, FOR PART 12 SEE BARCODE 0000151161, FOR PART 13

SEE BARCODE 0000151162 FOR PART 14 SEE BARCODE 000151163

WA 1-4932

Sedona



**Federal Communications Commission
Public Safety and Homeland Security Bureau**



VHF/UHF Narrowbanding Information for Public Safety Licensees

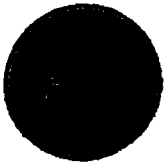
December 2010



Outline



- Narrowbanding Basics
- Narrowbanding Deadlines
- How to Prepare for Narrowbanding
- Modifying Licenses to Reflect Narrowbanding
- Additional Information Resources



Narrowbanding Basics



- Who is required to narrowband?
 - All Public Safety and Industrial/Business licensees in the 150-174 MHz (VHF) and 421-512 MHz (UHF) bands
- What is required?
 - By January 1, 2013, licensees must migrate their systems from 25 kHz (wideband) to 12.5 kHz (narrowband) channel bandwidth or a technology that achieves equivalent efficiency



Benefits of Narrowbanding



- Narrowbanding ensures more efficient use of the spectrum and greater spectrum access for public safety and non-public safety users
- Will relieve congestion in and result in increased channel availability for public safety VHF/UHF systems
- Narrowbanding has been consistently supported by the public safety community, including APCO, NPSTC, and other organizations



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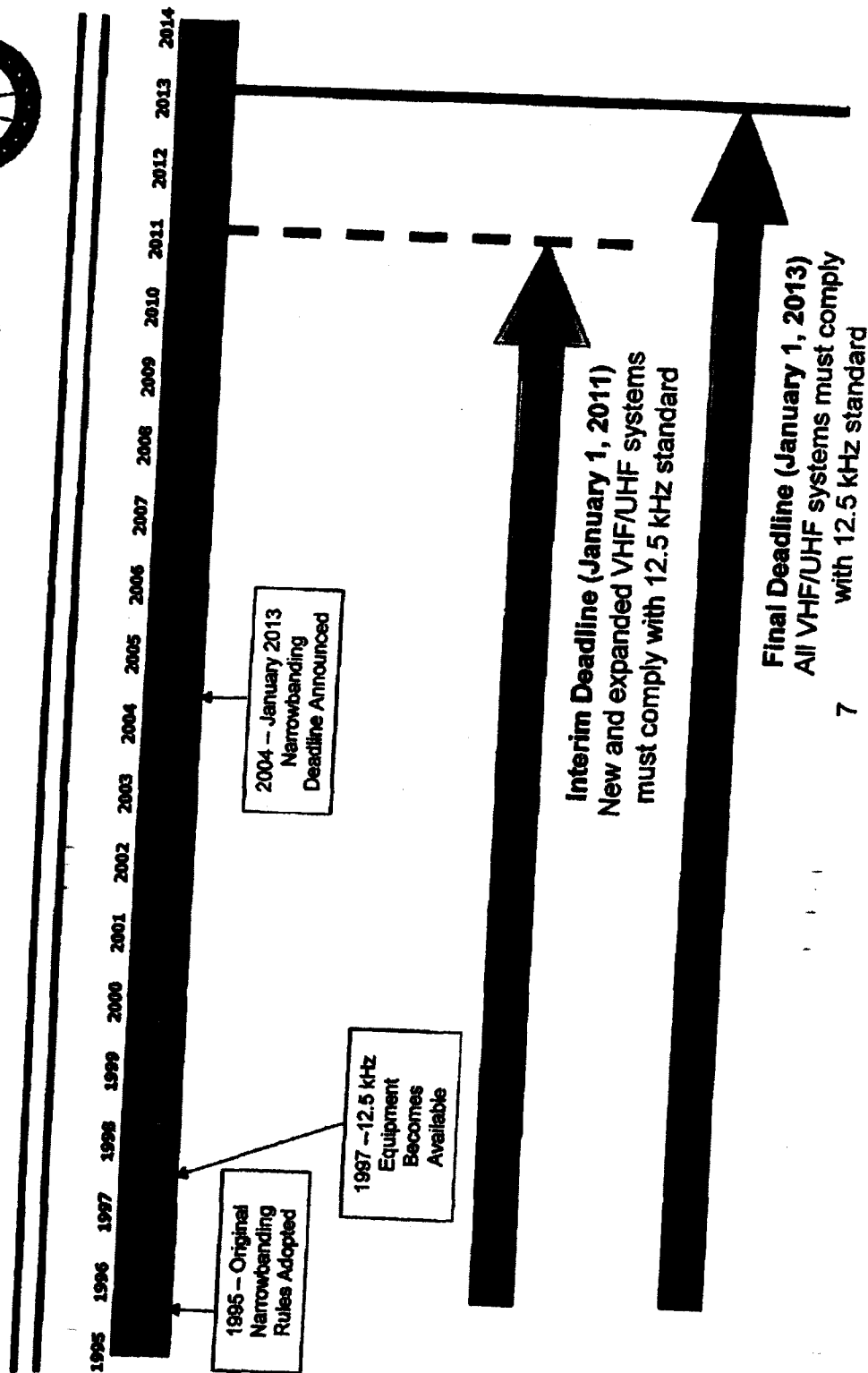


Narrowbanding Deadlines



- All licensees must complete narrowbanding to 12.5 kHz by January 1, 2013
 - FCC will also no longer allow manufacture or importation of equipment that includes a 25 kHz mode
- Some interim requirements take effect on January 1, 2011:
 - 12.5 kHz operation required for all new VHF/UHF systems or expansion of existing systems
 - FCC will not certify new equipment that includes a 25 KHz mode

Narrowbanding Timeline

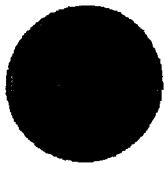




Why Meeting the Deadline Is Important

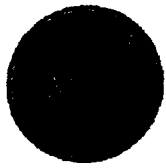


- After January 1, 2013, FCC interference rules will not protect non-compliant wideband systems from harmful interference
- Systems that fail to narrowband by the deadline could create interference or interoperability problems for systems that have narrowbanded
- Wideband equipment will not be available after January 1, 2013



The Deadline Will Not Be Extended

- The Commission has recently reaffirmed the January 1, 2013 deadline
- Licensees facing unique circumstances may request waivers, but waiver requests must meet a high standard and are not routinely granted
- Licensees concerned about meeting the deadline should focus on planning and preparation
- Informal contact with the Bureau is encouraged prior to any filing



Future Narrowbanding to 6.25 kHz Technology



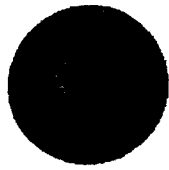
- Narrowbanding rules provide for eventual migration from 12.5 kHz to 6.25 kHz bandwidth
 - Intended to further increase efficiency and channel availability
- The FCC has not set a deadline for 6.25 kHz implementation
 - No deadline will be established without further notice and comment
- Licensees may narrowband to 6.25 kHz voluntarily
 - All 150-174 MHz and 421-512 MHz equipment certified after January 1, 2013 must include 6.25 kHz capability



Outline



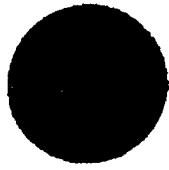
- Narrowbanding Basics
- Narrowbanding Deadlines
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Preparing for Narrowbanding



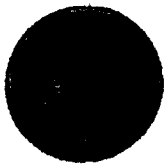
- Prepare NOW – January 1, 2013 is approaching fast!
- Determine how narrowbanding will affect your system
 - Will existing equipment need replacement/retuning?
 - Will additional sites be needed to maintain coverage?
 - Is coordination with neighboring systems required?
- Develop a compliance plan
 - Timeline
 - Funding requirements
- Contact the Public Safety and Homeland Security Bureau with questions/concerns



Availability of Narrowband Equipment



- All VHF/UHF equipment certified since 1997 has 12.5 kHz capability
 - Many systems have equipment with dual 25 kHz/12.5 kHz capability, making the narrowbanding transition easier
- Check with your vendor to determine whether your existing system equipment is narrowband-capable or needs modification/replacement



Funding Considerations



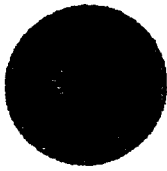
- Cost of narrowbanding will vary depending on the nature of each licensee's existing system
 - Narrowbanding generally does not require a system upgrade, though licensees may combine narrowbanding with other scheduled upgrades or modifications
 - Narrowbanding costs may be more substantial for older systems that require replacement of existing equipment
- Funding to support narrowbanding may be available through federal grant programs (agency contact information provided in "Additional Information Resources" section)



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Licensing Modifications



- Licensees should modify their licenses to add a narrowband emission designator prior to commencing narrowband operations
 - Licensees may maintain both narrowband and wideband designators on their licenses while they are transitioning their systems
- Once the narrowband transition is complete, licensees should modify their licenses by removing the wideband emission designator
- These actions can be completed online using ULS



Frequency Coordination



- Frequency coordination is not required for addition of narrowband emissions designator or removal of wideband emissions designator, provided no other changes are being made
 - For licensees north of Line A or west of Line C, reduction in bandwidth does not require Canadian coordination
- Frequency coordination is required when narrowbanding is combined with other modifications that alter a station's footprint
 - E.g., changes in location, antenna height, ERP, as well as when switching from analog to digital emissions



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PSHSB Website and Contacts



Roberto Mussenden

202-418-1428

Roberto.Mussenden@fcc.gov

Zenji Nakazawa

202-418-7949

Zenji.Nakazawa@fcc.gov

Narrowbanding Mailbox: narrowbanding@fcc.gov
Bureau Website:

<http://www.fcc.gov/pshs/public-safety-spectrum/narrowbanding.html>



Other Resources



- http://www.aaacomm.com/fcc_licensing.htm
- <http://www.mrfac.com/Mandatory-Narrowbanding.html>
- <http://www.npstc.org/narrowbanding.jsp>
- <http://www.IMSAafety.org>



Federal Resources



- DHS
 - Office of Emergency Communications (oecc@hq.dhs.gov)
 - SAFECOM
 - <http://www.safecomprogram.gov/SAFECOM/grant/default.htm>
- FEMA
 - www.fema.gov/grants
 - <http://www.fema.gov/government/grant/iecgp/index.shtm>
Interoperable Emergency Communications Grant Program
- DOJ National Institute of Justice
 - <http://www.ojp.usdoj.gov/nij/topics/technology/communication/radios/fcc-narrowbanding.htm>

ARIZONA WATER COMPANY

WORK AUTHORIZATION

W.A. NUMBER: 1-4932
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 2

SYSTEM: SEDONA VALLEY VISTA
DIVISION: VERDE VALLEY
TAX CODE: 0976
WORK TO START BY: UPON AUTHORIZATION
WORK TO BE FINISHED BY: WITHIN 180 DAYS

DESCRIPTION OF WORK:
Replace radios at 16 sites to be compliant with FCC narrow band requirement. Sites Include: Sedona Office, Harmony High Park Tank, Rainbow Well No. 6, Williams Well No. 7, Southwest Center Well No. 8, Harmony Hills Well No. 12, Sedona Golf Resort Tank, Rancho Rojo Well, Sedona Golf Resort Well, Valley Vista Well No. 13, Montezuma Hills Tank, Wickiup Mesa Tank, Rimrock Well No. 1, Rimrock Well No. 2, Montezuma Haven Well No. 3, and Pinewood Unit 9 Tanks. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:
APPROVED 2012 BUDGET ITEM (\$125,000)
The FCC narrow banding mandate requires that all existing radios that operate on channel bandwidths of 25 kHz be converted to 12.5 kHz or less on or before January 1, 2013. These radio replacements and modifications are needed in order for the Company to provide safe, reliable, and adequate water service.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY:	
MATERIAL	11,000	Mike Loggins	4-26-12
LABOR	8,400	REVIEWED FOR ESTIMATOR VERIFICATION:	
CONTRACT PORTION	93,371	Charles Briggs	05-04-2012
OVERHEAD	12,405	REVIEWED BY:	
TOTAL AUTHORIZED EXPENDITURES		Andrew P. Haas	4-26-12
CHARGEABLE TO THIS W.A.	\$ 125,176	Andy Haas	5-7-12
FUNDS RECEIVED:		APPROVED BY ENGINEERING:	
CONTRIBUTIONS RECEIVED	0	Fredrick Schneider	5-1-2012
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE:	
TOTAL CONTRIBUTIONS/ADVANCES	0	Joseph Harris	5/2/12
NET CASH REQUIRED	\$ 125,176	AUTHORIZED BY PRESIDENT:	
COMMENTS:		William M. Garfield	5-4-2012

There are two separate contracts with Global Data Specialists associated with this WA:
1. Sedona
2. Valley Vista

**RELEASED TO
CONSTRUCTION**
Authorized by **FRED SCHNEIDER**
Date **5/4/2012**

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER:

1-4932

P.E. NUMBER:

BUDGET ITEM NO.:

B-1

SHEET NO.:

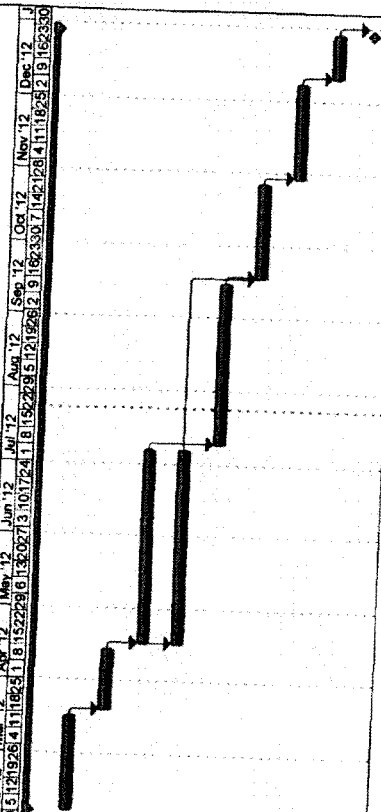
2 of 2

PROPERTY ACCOUNT		UNIT DESCRIPTION	QUANTITY	TOTAL INSTALLED AND W.A. NUMBER	
RETIREMENT					
PROPERTY					
UNITS					
PROJECT DESCRIPTION					
Replace radios at 16 sites to be compliant with FCC narrow band requirement. Sites Include: Sedona Office, Harmony High Park Tank, Rainbow Well No. 6, Williams Well No. 7, Southwest Center Well No. 8, Harmony Hills Well No. 12, Sedona Golf Resort Tank, Rancho Rojo Well, Sedona Golf Resort Well, Valley Vista Well No. 13, Montezuma Hills Tank, Wickiup Mesa Tank, Rimrock Well No. 1, Rimrock Well No. 2, Montezuma Haven Well No. 3, and Pinewood Unit 9 Tanks.					
C O N T R A C T W O R K	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
	Configure RTU and onsite integration for Valley Vista	397.2	1	\$ 6,525.00	\$ 6,525
	Purchase Ace radio for Valley Vista	397.2	4	3,790.00	15,160
	Purchase OIT for Valley Vista	397.2	1	5,792.00	5,792
	Program and onsite integration of OIT for Valley Vista	397.2	1	5,760.00	5,760
	Conduct radio path survey for Sedona	397.2	1	4,420.00	4,420
	Electrical install for Valley Vista	397.2	1	6,500.00	6,500
	Configure RTU and onsite integration for Sedona	397.2	1	7,952.50	7,953
	Purchase to power radio for Sedona	397.2	5	450.00	2,250
	Purchase DPSK card for Sedona	397.2	5	180.00	900
	Purchase Ace radio for Sedona	397.2	3	3,813.33	11,440
	Electrical install for Sedona	397.2	1	2,827.00	2,827
	Configure RTU and onsite integration for Rimrock	397.2	1	7,952.50	7,953
	Purchase to power radio for Rimrock	397.2	5	450.00	2,250
	Purchase DPSK card for Rimrock	397.2	5	180.00	900
	Electrical install for Rimrock	397.2	1	2,826.00	2,826
	Shipping, bonds, and tax for Valley Vista	397.2	1	4,598.00	4,598
	Shipping, bonds, and tax for Sedona	397.2	1	2,329.50	2,330
	Shipping, bonds, and tax for Rimrock	397.2	1	2,329.50	2,330
	Replace Base Station Radio	397.1	1	655.00	655
TOTAL CONTRACT WORK				\$	93,371
M A T E R I A L S	Purchase Wonderware software	397.2	1	\$ 9,500.00	\$ 9,500
	Purchase SCADA computer	397.2	1	1,600.00	1,600
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
	METERS	345			
TOTAL MATERIALS				\$	11,000
L A B O R	Engineering Design	397.2	40	\$ 50.00	\$ 2,000
	Project Management	397.2	40	50.00	2,000
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	397.2	80	55.00	4,400
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345				
INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345				
TOTAL LABOR				\$	8,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR				\$	112,771
OVERHEAD					12,405
TOTAL				\$	125,176
REFUNDABLE PORTION <input type="checkbox"/>		NON-REFUNDABLE PORTION <input type="checkbox"/>		COST ESTIMATE	

APH

WA 1-4932 - Replace 23 Wireless Telemetry and Voice Communication Units to Comply with FCC Narrowband Regulations

ID	Task Name	Start	Finish	Duration
1	Sedona FCC Narrow Band Schedule	1/18/12	12/28/2012	235 days
2	Update Quotes	2/6/2012	3/16/2012	30 days
3	Execute Contract Documents	2/6/2012	4/13/2012	20 days
4	Procure Materials	3/19/2012	7/6/2012	60 days
5	Program Radios	4/16/2012	7/6/2012	60 days
6	Install Radio Controls, Conduit, and Appearances	4/16/2012	9/14/2012	50 days
7	Start-Up	7/9/2012	10/26/2012	30 days
8	Field Troubleshooting	9/17/2012	12/7/2012	30 days
9	Project Close Out	10/29/2012	12/28/2012	15 days
10	In Service	12/28/2012	12/28/2012	0 days





ARIZONA WATER COMPANY

Verde Valley Division
45 Coffee Pot Dr., Suite 7
Sedona, AZ 86336 PH: 928-282-7092

PROPOSAL/CONTRACT

CONTRACTOR: Global Data Specialists	SYSTEM: Sedona
ADDRESS: 1815 W. First Avenue, Suite 110	W.A. No(s): 1-4932
CITY/STATE: Mesa, Arizona 85202	BID DUE DATE: March 31, 2012

- CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.
- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
 - Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
 - Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
 - Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
 - Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. This materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
 - Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statutes ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. § 42-5061 B.S.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
 - Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit a itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment therefor. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
 - The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
 - Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, together with a CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project Invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
 - Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 180 calendar days after the Commencement Notice is issued.
 - Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/construction will be substituted for the estimated labor and materials quantities, and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
 - The amount of applicable liquidated damages (or Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR:	PROPOSAL/CONTRACT ACCEPTED:
Global Data Specialists	ARIZONA WATER COMPANY
By: <i>[Signature]</i>	By: <i>[Signature]</i>
Print Name: DUANE MOORE	Print Name: Fredrick K. Schneider, PE
Title: SLES MANAGER	Title: Vice President - Engineering
Date: 4/23/12 4/23/12	Date: 5-4-12

AFH



Verde Valley Division
85 Coffee Pot Dr., Suite 7
Sedona, AZ 86336 PH: 520-262-7092

PROPOSAL/CONTRACT

CONTRACTOR: Global Data Specialists		SYSTEM: Sedona
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W.A. No: 1-4932
ADDRESS: 1815 W. First Avenue, Suite 110		BID DUE DATE: March 31, 2012
CITY/ST ZIP: Mesa, Arizona 85202		BID BOND REQUIRED: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

DESCRIPTION
OF PROJECT:

Provide Narrow Banding upgrade for the Sedona Water System Radio Controls.

[illegible]

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.



ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Duane Moody
Global Data Specialists
1815 W. First Avenue, Suite 110
Mesa, Arizona 85202

DATE: April 25, 2012
DIVISION: VERDE VALLEY
SYSTEM: SEDONA
W.A.: 1-4932

THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):

DESCRIPTION OF WORK:

Provide narrow banding upgrade for the Sedona water system radio controls

PERFORMANCE AND
PAYMENT BONDS
REQUIRED:

☒ Yes ☒ No

TOTAL DAYS
ALLOWED: 180

COMPLETION
DATE: October 23, 2012

Prior to the start of construction, please call Keith Self, Division Manager at 928-282-7092 to schedule a pre-construction meeting.

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ARIZONA WATER COMPANY
PHOENIX - ENGINEERING

ARIZONA WATER COMPANY

Company

GLOBAL DATA SPECIALISTS

Contractor (type name)

By

Title Vice President - Engineering

By

Title Sales Manager

AFH

W:\PROJECTS\2012\4932 SEDONA & VALLEY VISTA RADIO NARROW BAND AGREEMENTS\CONTRACTS\5-3-12-2 GLOBAL DATA COMMENCEMENT NOTICE 1-4932 SEDONA RADIO CONTROLS.DOCX 1/15/09 | FKS:afh | E:



Performance Bond
RECEIVED
Private Work

JUN 11 2012

ARIZONA WATER COMPANY
PHOENIX - ENGINEERING

Contractors Bonding
and Insurance Company
1213 Valley Street
P.O. Box 9271
Seattle, WA 98109-0271
For the CBIC branch
nearest you, call Toll Free
(888) 283-2242
(888) 293-2242 FAX

Bond Number: CSB0000110

Know All Persons By These Presents, That we, Global Data Specialists,
called the Principal, and Contractors Bonding and Insurance Company, a Washington corporation, called the Surety, are held and firmly bound
unto Arizona Water Company,
called the Obligor, in the sum of Forty Three Thousand Nine Hundred Fifty Nine and 24/100 Dollars (\$ 43,959.24)
for the payment whereof said Principal and Surety bind themselves firmly by these presents.

Whereas, the Principal has entered into a contract with the Obligor, dated April 25, 2012, for
Sedona Radio Controls W.A. NO. 1-4932 ("Contract").

Now, Therefore, the condition of this obligation is such that if the Principal shall promptly and faithfully perform the construction work to be
done under the Contract and shall promptly make payment to all Claimants, as hereinafter defined, for all labor and material used, consumed or
incorporated in the performance of the Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

Whenever Principal shall be, and be declared by Obligor to be in default under the Contract for failing to perform the construction work, the
Obligor having performed Obligor's obligations thereunder, Surety shall, within a reasonable time:

1. Upon entering into an acceptable takeover agreement with the Obligor, undertake to complete the construction work to be done under the
Contract; or
2. Obtain bids or negotiated proposals from qualified contractors for completion of the construction work to be done under the Contract, and
arrange for a contract to be prepared for execution by the Obligor, and the contractor, to be secured with performance and payment bonds
executed by a qualified surety; or
3. Waive its right to perform and complete, arrange for completion, or obtain a new contractor.
4. The Contract balance, as defined below, shall be credited against the reasonable cost of completing the construction work to be performed
under the Contract. If completed by the Obligor pursuant to paragraphs 2 or 3 above, and the reasonable cost exceeds the Contract balance,
the Surety shall pay to the Obligor such excess, but in no event shall the aggregate liability of the Surety exceed the amount of this bond.
If the Surety completes the work pursuant to paragraph 1 above, that portion of the Contract balance as may be required to complete the
construction work to be done under the Contract and to reimburse the Surety for its outlays shall be paid to the Surety at the times and in the
manner as said sums would have been payable to Principal had there been no default under the Contract; provided, however, that to the extent
that the Surety's outlays exceed the balance of the Contract price paid to Surety by Obligor, the Surety shall be entitled to a dollar for dollar
reduction of its liability under this bond, and the Surety's aggregate liability shall not exceed the penal sum of this bond. The term "Contract
balance," as used in the paragraph, shall mean the total amount payable by Obligor under the Contract and any amendments thereto, less the
amounts heretofore properly paid by Obligor under the Contract. The term "construction work" as used herein shall mean the providing by the
Principal of all labor and/or material necessary to complete the Principal's scope of work under the Contract. Notwithstanding any language
in the Contract to the contrary, the Surety shall not be liable to the Obligor or others for obligations of the Principal that are unrelated to the
performance of the construction work under the Contract, and the Contract balance shall not be reduced or set off on account of any such
unrelated obligations, nor for any related obligations that would not be covered under this bond.
5. Any suit by the Obligor under this bond must be instituted before the earlier of: (a) the expiration of one year from the date of substantial
completion of the work, or (b) one year after the Principal ceased performing the construction work under the Contract. If the limitation set
forth in this bond is void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the
suit shall be applicable.
6. A Claimant is defined as one other than the Obligor having both (a) a direct contract with the Principal or with a direct subcontractor of
the principal for labor and/or materials used, consumed or incorporated in the performance of the construction work under the Contract
and (b) an enforceable lien on the property improved under the Contract for labor and/or materials used, consumed or incorporated in the
performance of the construction work under the Contract.

7. The above-named Principal and Surety hereby jointly and severally agree with the Oblige that every Claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the later of (a) the date on which the last of such claimant's work or labor was done or performed or materials were furnished by such claimant, or (b) the date the Claimant filed an enforceable lien, may sue on this bond, prosecute the suit to final judgment for the amount due under Claimant's contract for the labor and/or materials supplied by the Claimant which were used, consumed or incorporated in the performance of the work, and have execution thereon. The Oblige shall not be liable for the payment of any costs or expenses of any such suit.
8. No suit or action shall be commenced hereunder by any Claimant after the expiration of one (1) year after the day on which the Claimant last supplied the labor and/or materials for which the claim is made. If this limitation is void or prohibited by law, then the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
9. No suit or action shall be commenced hereunder by the Oblige or any Claimant other than in a court of competent jurisdiction in the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.
10. The amount of this bond shall be reduced by and to the extent of any payment or payments made by Surety in good faith hereunder whether made directly to Oblige or Claimant(s) or otherwise in discharge of Principal's obligations. The Surety's liability hereunder to the Oblige and all Claimants is limited, singly, or in the aggregate, to the penal sum of the bond set forth herein. The Surety may, at its option, discharge all obligations under this bond by interpleading into the registry of any court of competent jurisdiction of the full unexonerated penal sum of this bond, or such portion thereof that will satisfy the obligations owed to the Oblige and/or the Claimant(s). This bond shall not be liable for any liability of the Principal for tortious acts, whether or not said liability is direct or is imposed by the Contract, and shall not serve as or be a substitute for or supplemental to any liability or other insurance required by the Contract.

Signed and sealed this 1 day of June, 2012.

Global Data Specialists
(Principal's name)

Contractors Bonding and Insurance Company

By: M. Meyers

By: Melanie L. Warnock

Melanie L. Warnock, Attorney-in-fact

Its: GENERAL MANAGER



Contractors Bonding and Insurance Company
1213 Valley Street
P.O. Box 9271
Seattle, WA 98109-0271

POWER OF ATTORNEY

Contractors Bonding and Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That Contractors Bonding and Insurance Company, a Washington corporation, does hereby make, constitute and appoint:
Jorge L. Mendez, Melanie L. Warnock, Jessika Gulliver, jointly or severally

in the City of Phoenix, State of Arizona its true and lawful Agent and Attorney in Fact, with full power and authority hereby conferred, to sign, execute, acknowledge and deliver for and on its behalf as Surety, the following described bond.

Any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million and 00/100 Dollars (\$10,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

The Contractors Bonding and Insurance Company further certifies that the following is a true and exact copy of the Resolution adopted by the Board of Directors of Contractors Bonding and Insurance Company, and now in force to-wit:

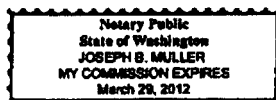
"All bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation shall be executed in the corporate name of the Corporation by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Corporation. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation. The signature of any such officer and the corporate seal may be printed by facsimile or other electronic image."

IN WITNESS WHEREOF, the Contractors Bonding and Insurance Company has caused these presents to be executed by its Vice President with its corporate seal affixed this 6th day of June, 2011.

State of Washington }
County of King } SS

On this 6th day of June, 2011, before me, a Notary Public, personally appeared Roy C. Die who being by me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of the Contractors Bonding and Insurance Company and acknowledged said instrument to be the voluntary act and deed of said corporation.

Joseph B. Muller
Joseph B. Muller Notary Public



Contractors Bonding and Insurance Company

Roy C. Die Vice President

CERTIFICATE

I, the undersigned officer of Contractors Bonding and Insurance Company, a stock corporation of the State of Washington, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the Contractors Bonding and Insurance Company this 1st day of June, 2012.

Contractors Bonding and Insurance Company

Roy C. Die Vice President

0275381032812

A0039511



ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH 2010 REVISIONS

ARIZONA WATER COMPANY

GENERAL CONDITIONS OF CONTRACT: E-4-1

ARIZONA WATER COMPANY

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. Invitation to Bid. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. Contract. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. Inspector. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. 40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- A. The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

- C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all labor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

ARIZONA WATER COMPANY

CONSTRUCTION SPECIFICATIONS: E-8-1

ERRATA 2010

ARIZONA WATER COMPANY

E-8-1

**CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON**

DEFINITIONS

- A. **Company**. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. **Company's Authorized Representative**. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. **Contractor**. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. **Construction Drawings**. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. **Contract**. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

**CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON**

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 - 4" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 - 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 - 2½" Hose Nozzles, NPT (Miami only.)

- (5) 1 – 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 – 2½" Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12"; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - 1. TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)

l. **PIPE, PLASTIC:** Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.

m. **POLYETHYLENE ENCASUREMENT (Polywrap):** For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.

n. **COUPLING:** Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. **STOP, ANGLE METER, BALL:** Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. **STOP, CORP:** Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. **STOP, CURB:** Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".

Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).

- r. **TAPPING SADDLE:** Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. **TAPPING SLEEVE:** Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. **TAPPING VALVE:** Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" – 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. **U-BRANCH:** Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. **VALVE BOXES:** Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. **VAULTS:** Utility Vault Company, Chandler, AZ.
- (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.
- (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- x. **VALVE, METER:** Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

- y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturer's recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

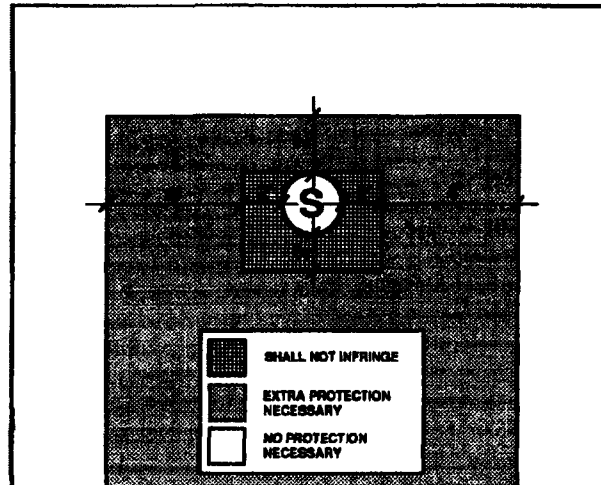
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

- a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



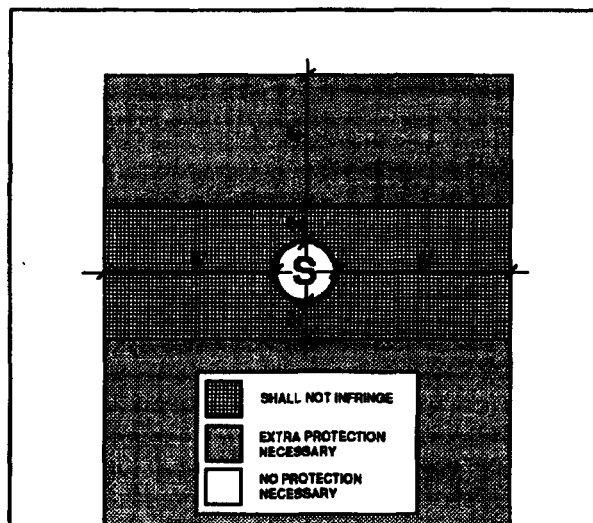
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

- b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - 1. Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - 2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes ($7^{\circ} 7'$) or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes ($5^{\circ} 21'$) or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mat@azwater.com

ARIZONA WATER COMPANY

To: Tony Geiger – US Pipe

November 24, 2010

Subject: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

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We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan
Clow Valve Company
8121 N. 10th Avenue
Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5½" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY

To: Jim Ryan – Clow Valve Company

October 19, 2010

Subject: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products.
If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

February 21, 2012

Contractor

Re: Fitting Specifications

Dear Contractor:

Effective March 1, 2012, Arizona Water Company (the "Company") has changed its fitting specifications for Ductile Iron Fittings and Ductile Iron Flanged Fittings ("Fittings"). All Fittings purchased by the Company, on the Company's behalf or installed with the intent of being conveyed to the Company, must comply with the requirements noted below.

Previous Fitting Specifications:

Fittings

Manufactured by Tyler or Union, Crosses, Elbows, Tees, Cap Reducer, Adapter, Plug, Blind Flange and Tapped Flange: Ductile Iron, Class 350, SSB, and Cast Iron Cement Lined.

New Fitting Specification:

Ductile Iron Fittings (Push-On and Mechanical Joint)

Ductile Iron Push-On and Mechanical Joint ("MJ") fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C153/A21.53 for compact design and ANSI/AWWA C110/A21.10 for full body design. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness cement mortar lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. MJ fittings with flanged end(s) will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. All fittings shall be NSF-61 listed for use with potable water.

Ductile Iron Flanged Fittings

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY

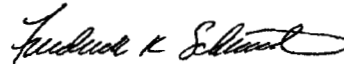
Contractor
Fitting Specifications

February 21, 2012
Page 2

Ductile Iron flanged fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C110/A21.10 design. Flange ends will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. All fittings shall be NSF-61 listed for use with potable water.

If you have any questions or require further information, please contact me at 602-240-6860.

Very truly yours,



Fredrick K. Schneider, PE
Vice President - Engineering
engineering@azwater.com

afh
Enclosure

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

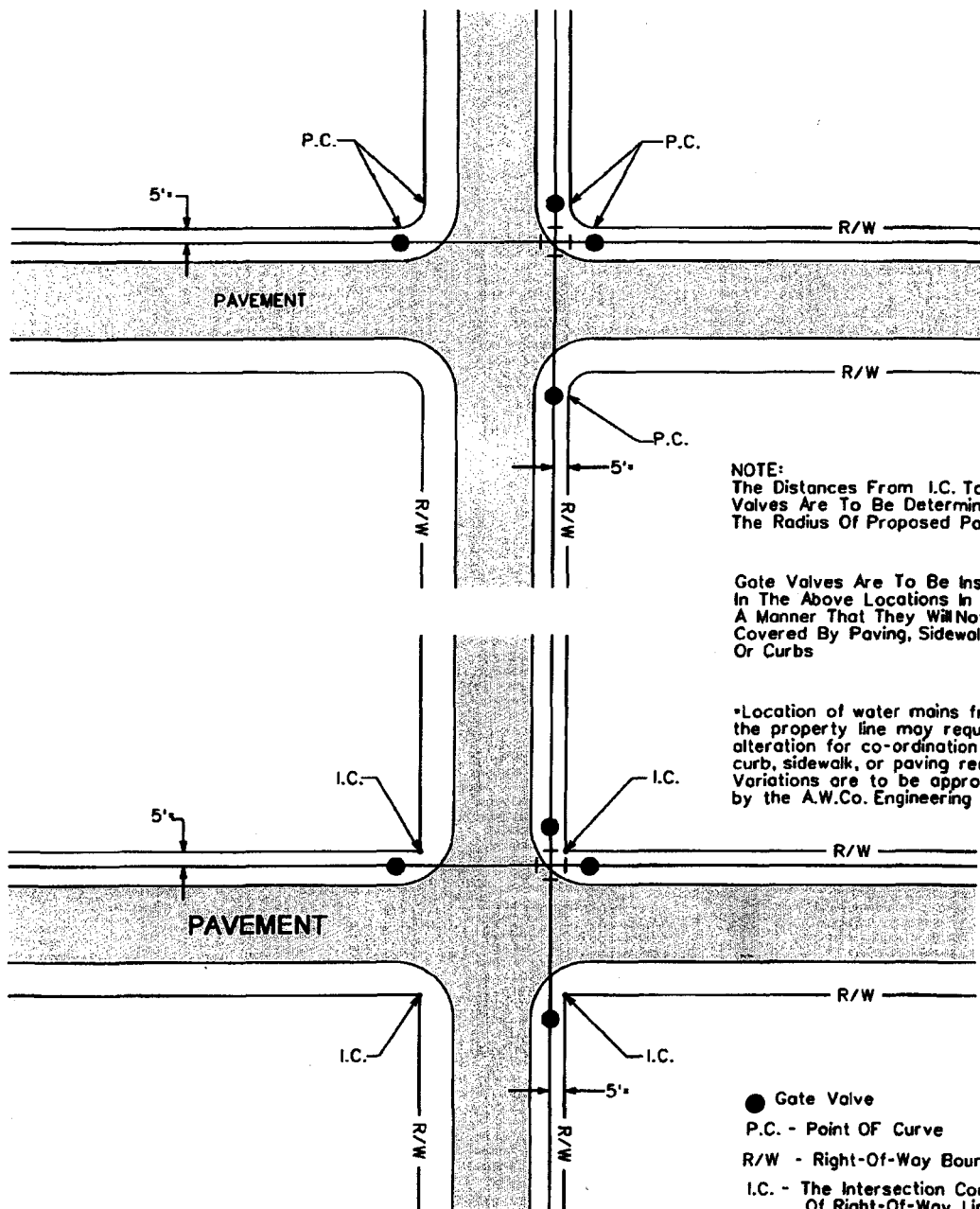
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS - DUCTILE IRON

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E-9-1	TYPICAL GATE VALVE LOCATIONS
E-9-2	INSTALLATION OF TYPICAL VERTICAL AND HORIZONTAL GATE VALVES
E-9-3	INSTALLATION OF TYPICAL TAPPING SLEEVE AND VALVE
E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
E-9-5	INSTALLATION OF TYPICAL THRUST BLOCKING SCHEDULE THRUST BLOCK FOR VERTICAL BENDS, AND MEGALUG THRUST RESTRAINTS
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E-9-28	PIPE WARNING TAPE, LOCATOR WIRE, AND LOCATOR WIRE TERMINATION
E-9-29	INSTALLATION OF A TYPICAL SAMPLING STATION
E-9-30-1	WATER AND SANITARY SEWER SEPARATION/PROTECTION PERPENDICULAR
E-9-30-2	WATER AND SANITARY SEWER SEPARATION/PROTECTION – PARALLEL



ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL GATE VALVE LOCATIONS

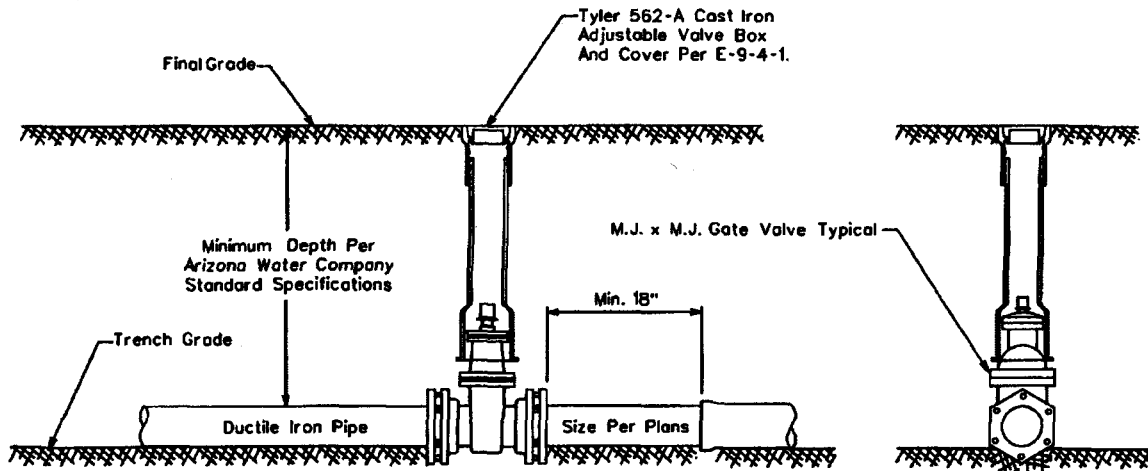
DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3/20/86	△ 1/31/2001	E-9-1-1
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FOR 6" THROUGH 12" GATE VALVES

Mueller Resilant Wedge Gate Valves
Catalog Number A-2360-...
ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resilant Wedge Gate Valves
Catalog Number A-2361-...
ANSI/AWWA C509 Compliant



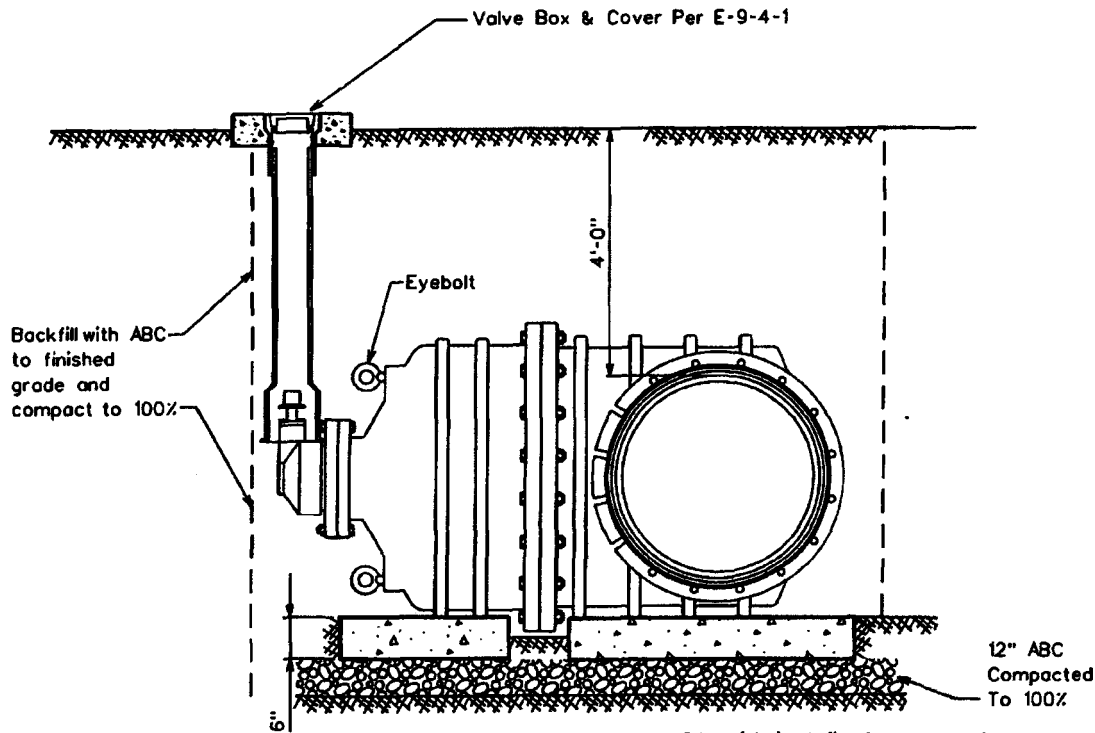
All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

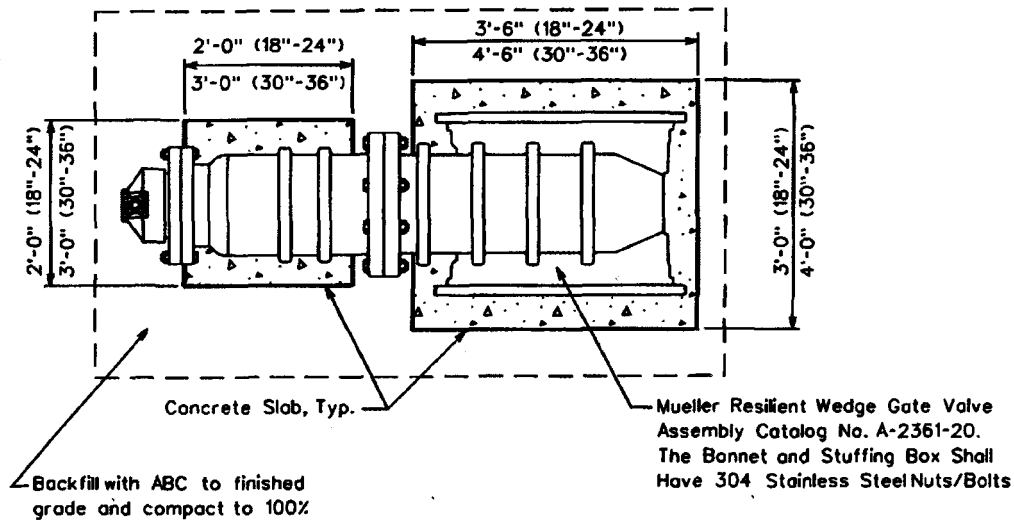
STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY CB	APPROVED BY MW	DATE 03.20.1986	08.23.2006	E-9-2-1
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All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi, per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



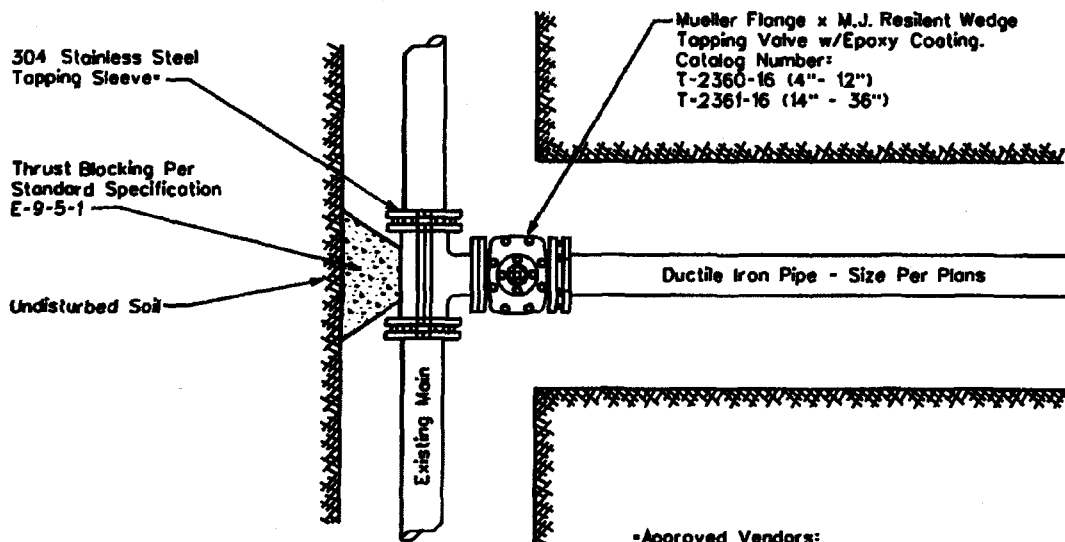
All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY CB	APPROVED BY:	DATE 12.07.2004	△ 5.13.2005	E-9-2-3
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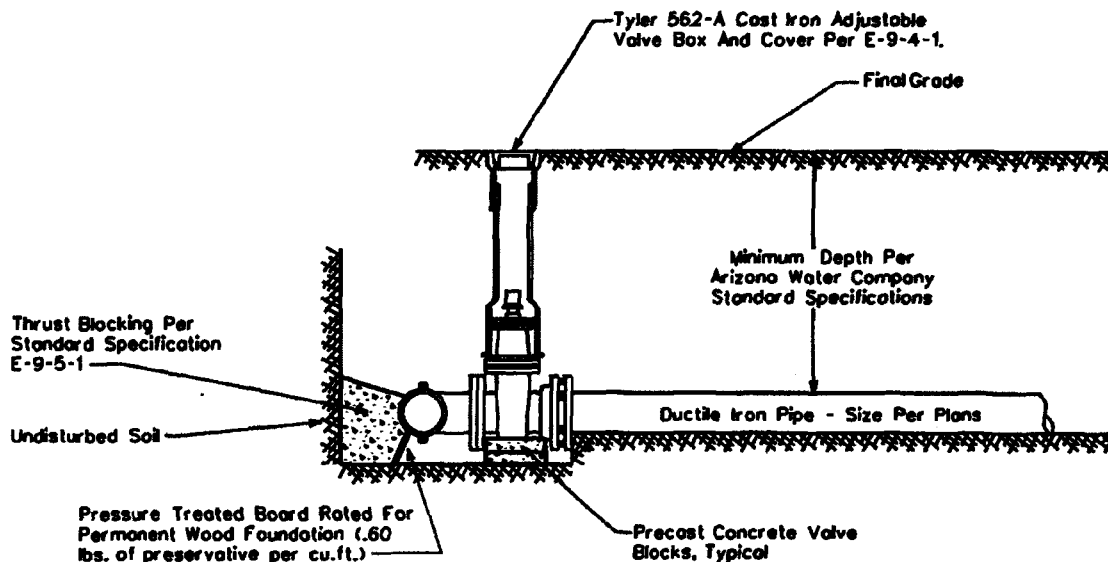


NOTE:

1. All flanges, bolts, and nuts shall be kept free of concrete.
2. Air pressure test the tapping sleeve before the live tap is made.
3. Polywrap all new fittings

Approved Vendors:

Mueller, Catalog No. H304, 304 Stainless Steel
 JCM, Model 432, 304 Stainless Steel
 Romac, 'SST', 304 Stainless Steel
 Cascade, 'CST-EX', 304 Stainless Steel

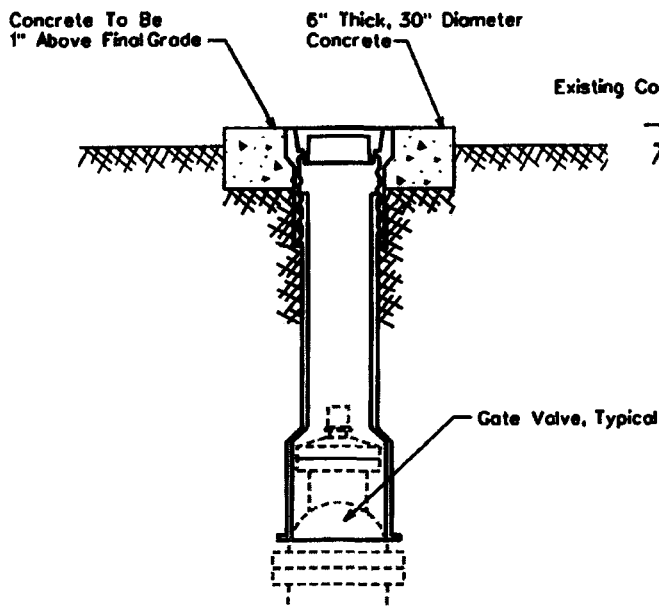


ARIZONA WATER COMPANY

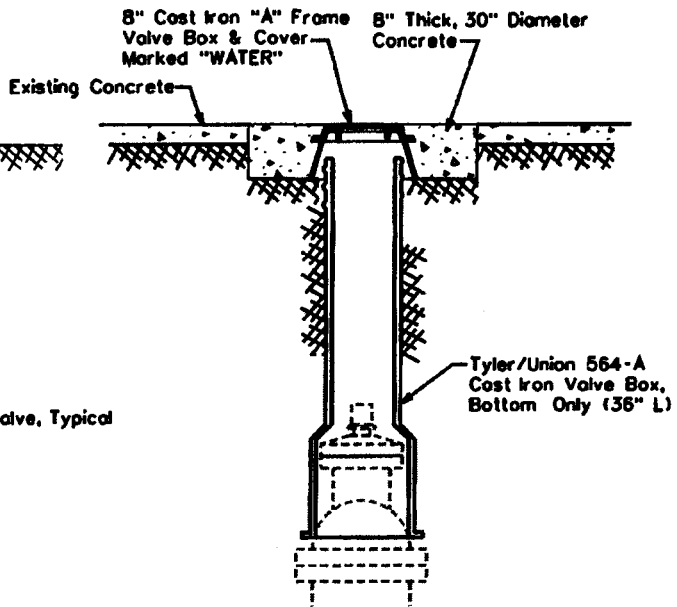
STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL TAPPING SLEEVE AND VALVE

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 08.23.2006	E-9-5-1
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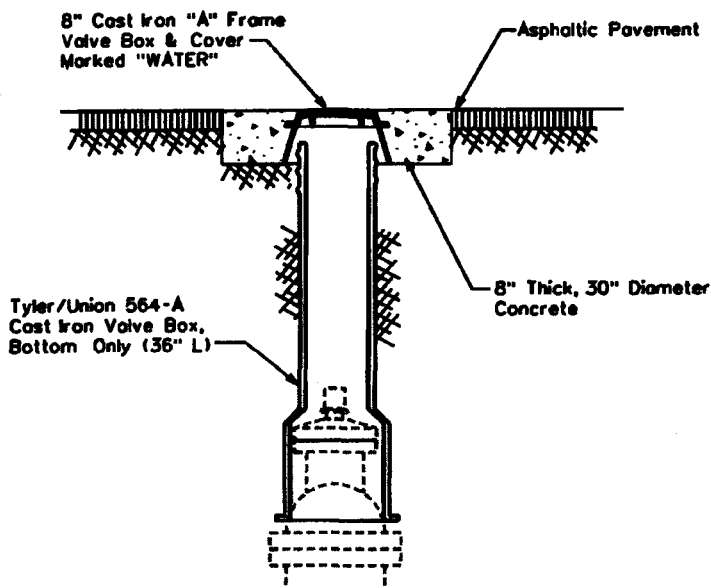


NON-VEHICULAR VALVE BOX



CONCRETE VALVE BOX

For Areas Subject To Vehicular Traffic



ASPHALT VALVE BOX

For Areas Subject To Vehicular Traffic

NOTE:

1. The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"
For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"
3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
4. Use Minimum Class "C" Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ARIZONA WATER COMPANY

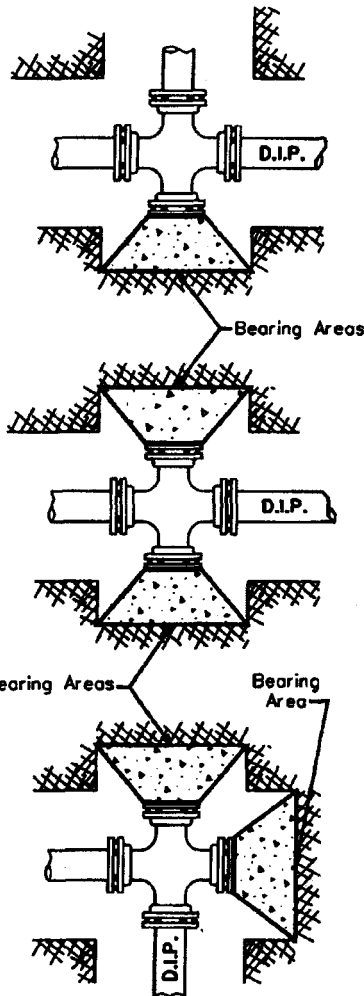
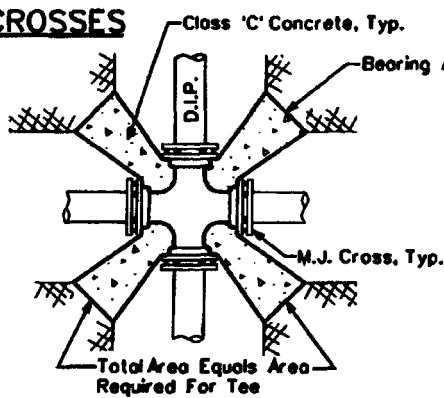
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

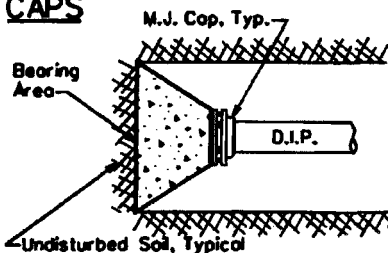
**TYPICAL VALVE SUBJECT TO NON-VEHICULAR
AND VEHICULAR TRAFFIC**

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 8.24.2006	E-9-4-1
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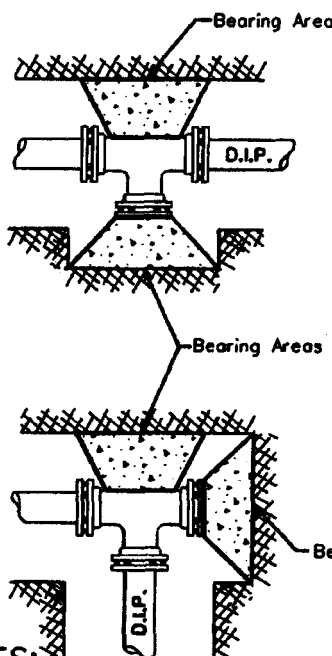
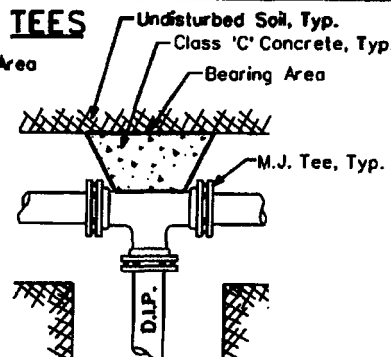
CROSSES



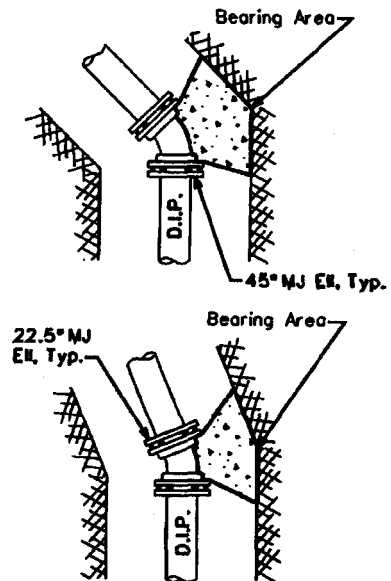
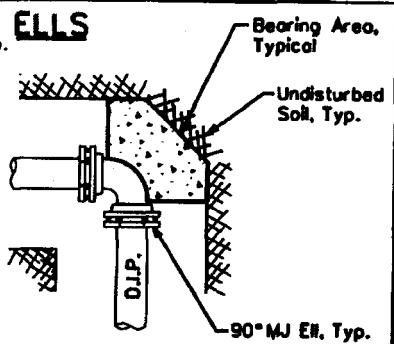
CAPS



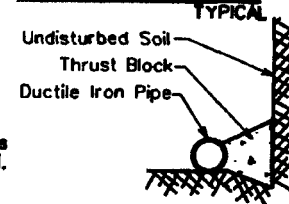
TEES



ELLS



CROSS SECTION



NOTES:

1. Use minimum Class 'C' concrete, which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi, per MAG Section 725, Table 725-1.
2. Thrust blocks are to bear on undisturbed earth with minimum bearing area as shown. If not undisturbed, areas will be increased as required.
3. Place the pressure treated form board in front of all plugs before pouring thrust blocks.
4. Form all non-bearing areas to prevent any concrete from entering any joint.
5. All flanges, bolts and nuts shall be kept free of concrete.
6. Center the bearing area on the pipe centerline and force line.
7. All pipe fittings to be wrapped with polyethylene pipe wrap prior to thrust block installation, (where applicable)

THRUST BLOCK SCHEDULE

PIPE SIZE	TEE, 45°, AND 22.5° ELLS, & PLUGS	90° ELLS
6" And Under	4 Sq.Ft.	6 Sq.Ft.
8"	6 Sq.Ft.	9 Sq.Ft.
12"	13 Sq.Ft.	20 Sq.Ft.
16"	23 Sq.Ft.	32 Sq.Ft.
18" And Larger	Calculated Per Project	

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL THRUST BLOCKING SCHEDULE

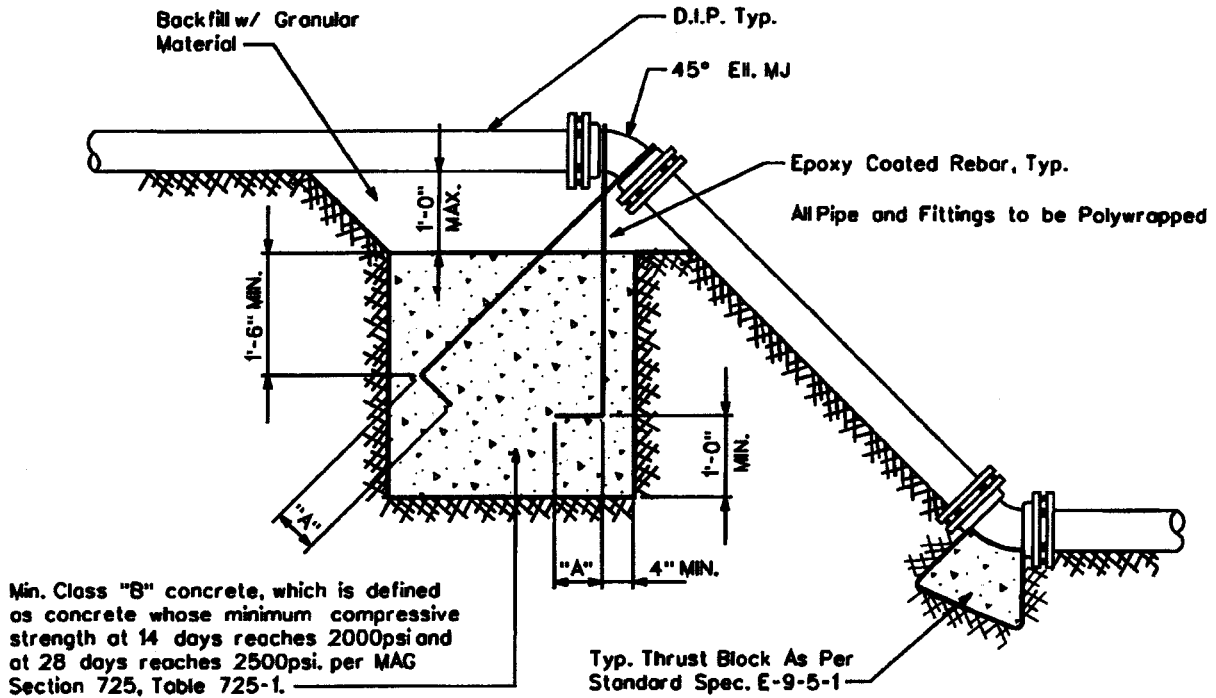
DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	05.27.2005	E-9-5-1
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NOTES

1. Bars in Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
2. Bars To Have 90° Hook @ Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	Min. Block Dimension (WxHxL)
6"	#6	6"	3'x3'x3'
8"	#6	9"	4'x3'x4'
12"	#8	9"	5'x4'x5'
16"	#9	12"	7'x6'x7'

• For 125 P.S.I. Working Pressure

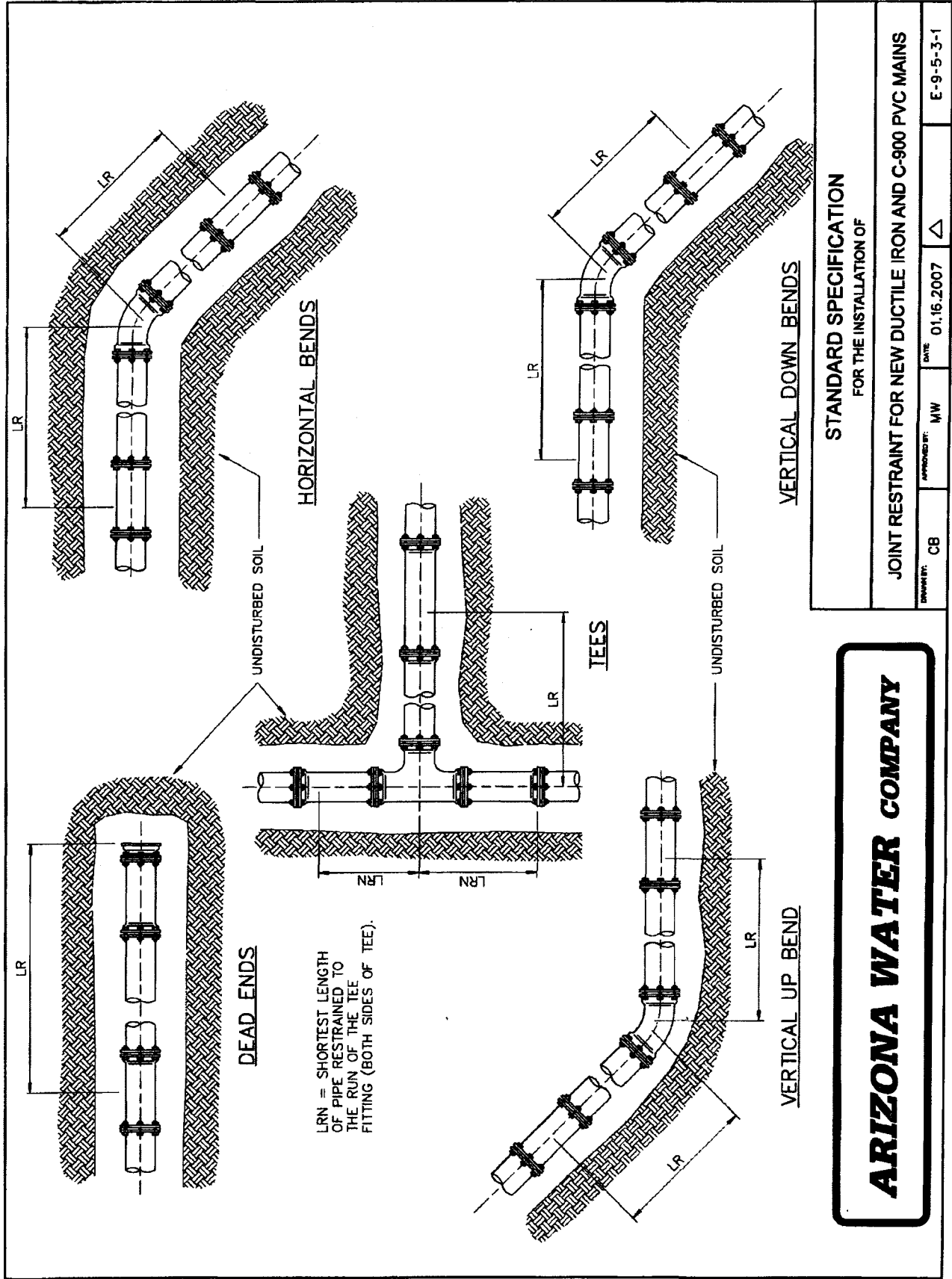


ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

DRAWN BY: JPK	APPROVED BY: MJW	DATE: 7-5-96	△ 01.16.2007	E-9-5-2
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STANDARD SPECIFICATION FOR THE INSTALLATION OF			
JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS			
DESIGNED BY: CB	APPROVED BY: MW	DATE: 01.16.2007	△
			E-9-5-3-1

ARIZONA WATER COMPANY

RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE											
NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS					
	22-1/2'			LRN=0'		45' BEND FITTINGS		22-1/2' BEND FITTINGS		DEAD ENDS	
	90'	45'	22-1/2'	LRN=0'	LRN=10'	DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND
4	18	7	4	30	8	31	18	13	7	6	3
6	25	10	5	43	20	44	25	18	10	9	5
8	32	13	6	56	34	58	32	24	13	11	6
10	38	16	8	68	45	69	38	29	16	14	8
12	45	19	9	80	57	81	45	34	19	16	9
14	51	21	10	91	68	92	51	38	21	18	10
16	57	24	11	103	79	104	57	43	24	21	11
18	62	26	12	113	90	115	62	48	26	23	12
20	68	28	14	125	100	126	68	52	28	25	14
24	79	33	16	145	121	147	79	61	33	29	16

RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP											
NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS					
	22-1/2'			LRN=0'		45' BEND FITTINGS		22-1/2' BEND FITTINGS		DEAD ENDS	
	90'	45'	22-1/2'	LRN=0'	LRN=10'	DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND
4	26	11	5	69	18	72	26	30	11	14	5
6	36	15	7	99	47	102	36	42	15	20	7
8	47	19	9	130	78	133	47	55	19	26	9
10	56	23	11	157	103	159	56	66	23	32	11
12	65	27	13	185	131	187	65	77	27	37	13
14	74	31	15	211	156	214	74	89	31	42	15
16	82	34	16	238	183	241	82	100	34	48	16
18	90	37	18	263	207	266	90	110	38	53	18
20	98	41	20	289	233	292	98	121	41	58	20
24	113	47	22	337	280	340	113	141	47	68	22

NOTES:

1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.
ALL LENGTHS ARE GIVEN IN FEET.
2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

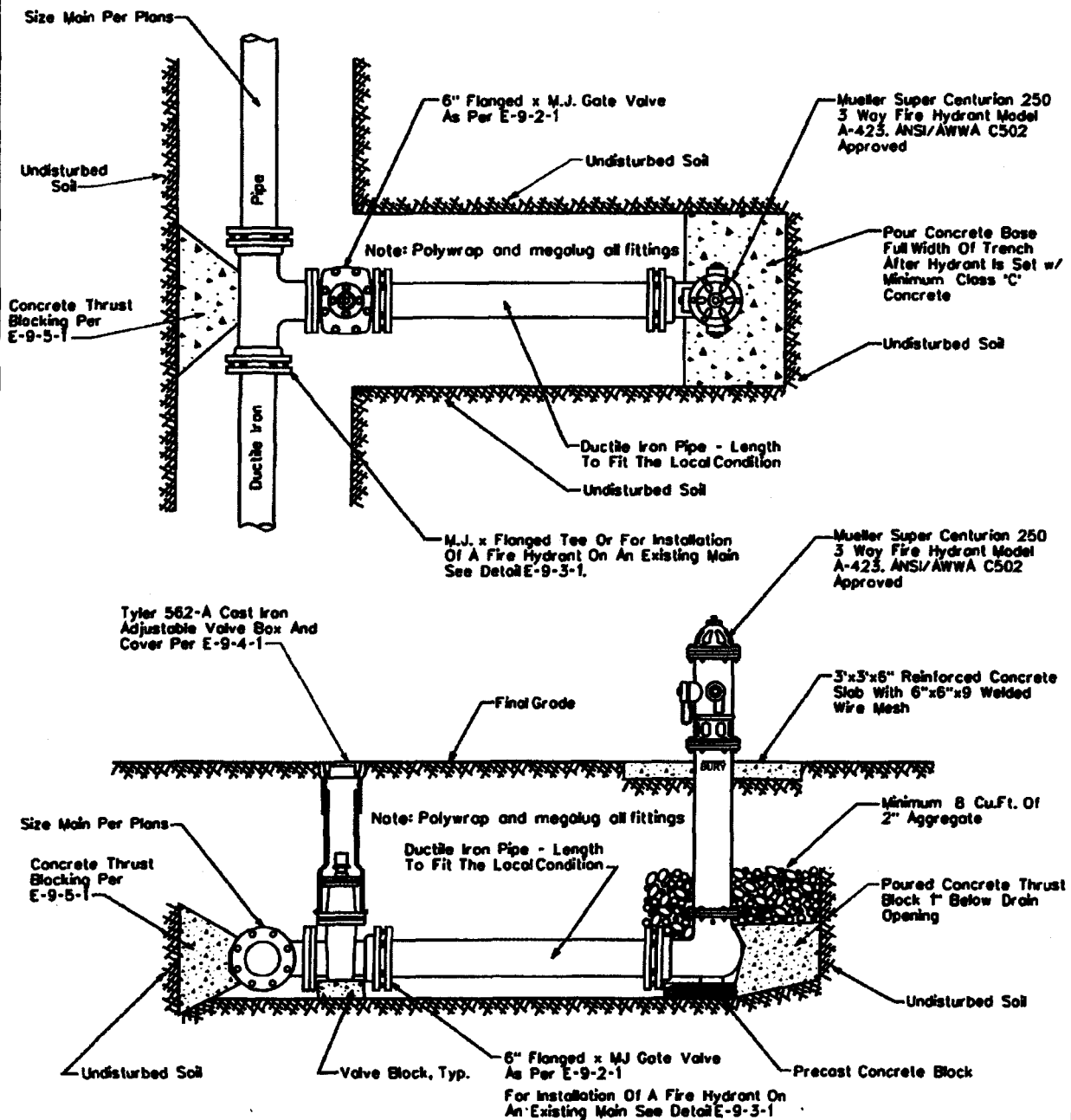
DESIGNED BY: CB

APPROVED BY: MW

DATE: 01.16.2007

△

E-9-5-3-2



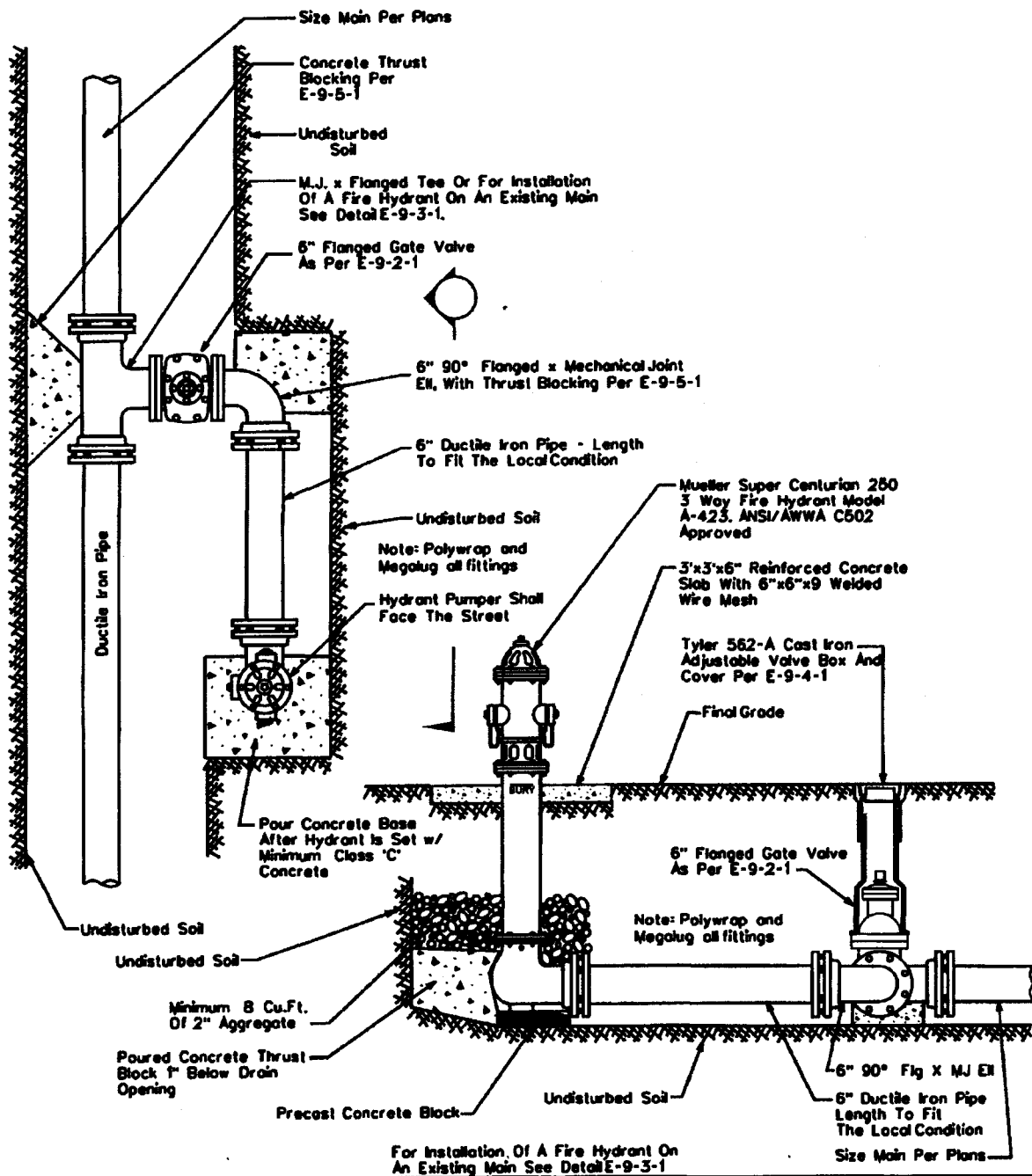
NOTE: All Flanges, Bolts, Nuts and Drain Holes Shall Be Kept Free Of Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL PERPENDICULAR FIRE HYDRANT

DRAWN BY: CB	APPROVED BY: MW	DATE: 1-28-91	08.24.2006	E-9-6-1
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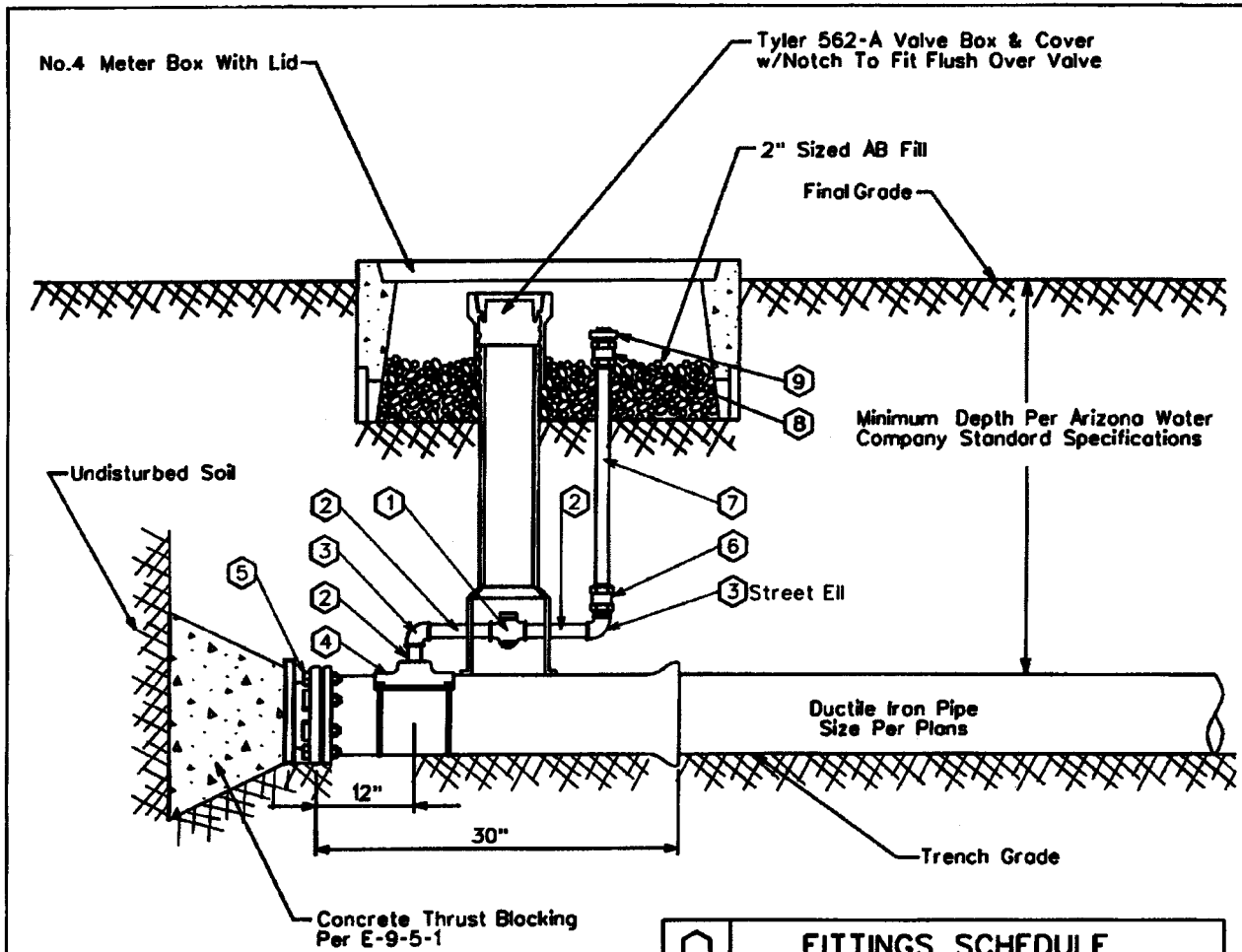
NOTE: All Flanges, Bolts, Nuts And Drain Holes Shall Be Kept Free Of Concrete.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL PARALLEL FIRE HYDRANT

DRAWN BY: JW	APPROVED BY: MW	DATE: 03.20.1986	08.24.2006	E-9-7-1
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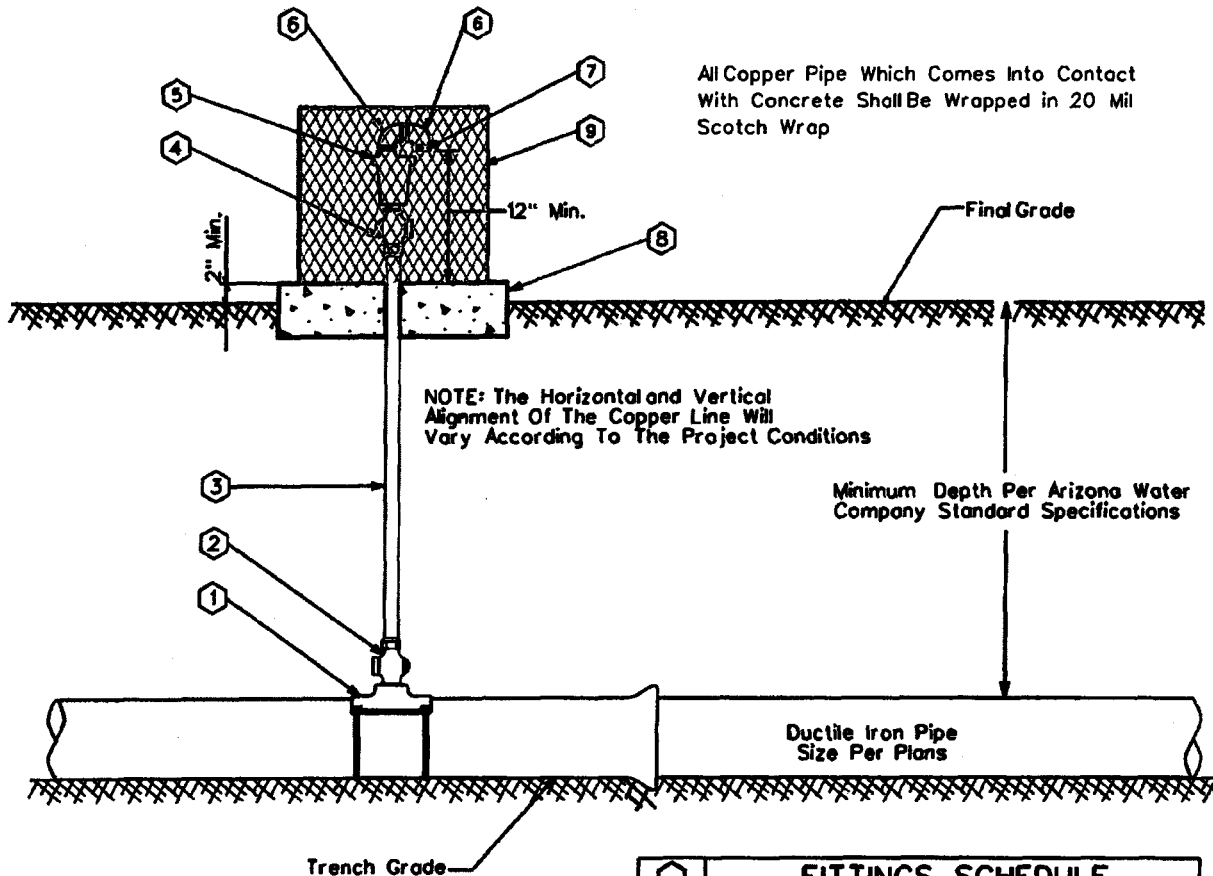
○	FITTINGS SCHEDULE
1.	2" Mueller 300 Ball Curb Valve B-20283 FIP x FIP w/ 2" Mueller Brass Square Wrench Nut Adapter B-20299
2.	2" Brass Nipple - Length To Fit Field Conditions
3.	2" Brass 90° Elbow, IPST
4.	Mueller Double Strap Bronze Service Saddle - BR2B
5.	M.J. Plug - Megalug Restraints May Be Required
6.	2" Straight Coupling CC x FIP H-15451
7.	2" Copper Pipe
8.	2" Straight Coupling CC x MP H-15428
9.	2" Square Head Plug, MP

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

2" BLOWOFF ASSEMBLY

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 03.21.2006	E-9-B-1
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GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{1}{4}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

○	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	$\frac{1}{2}$ " Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrosible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshock, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan

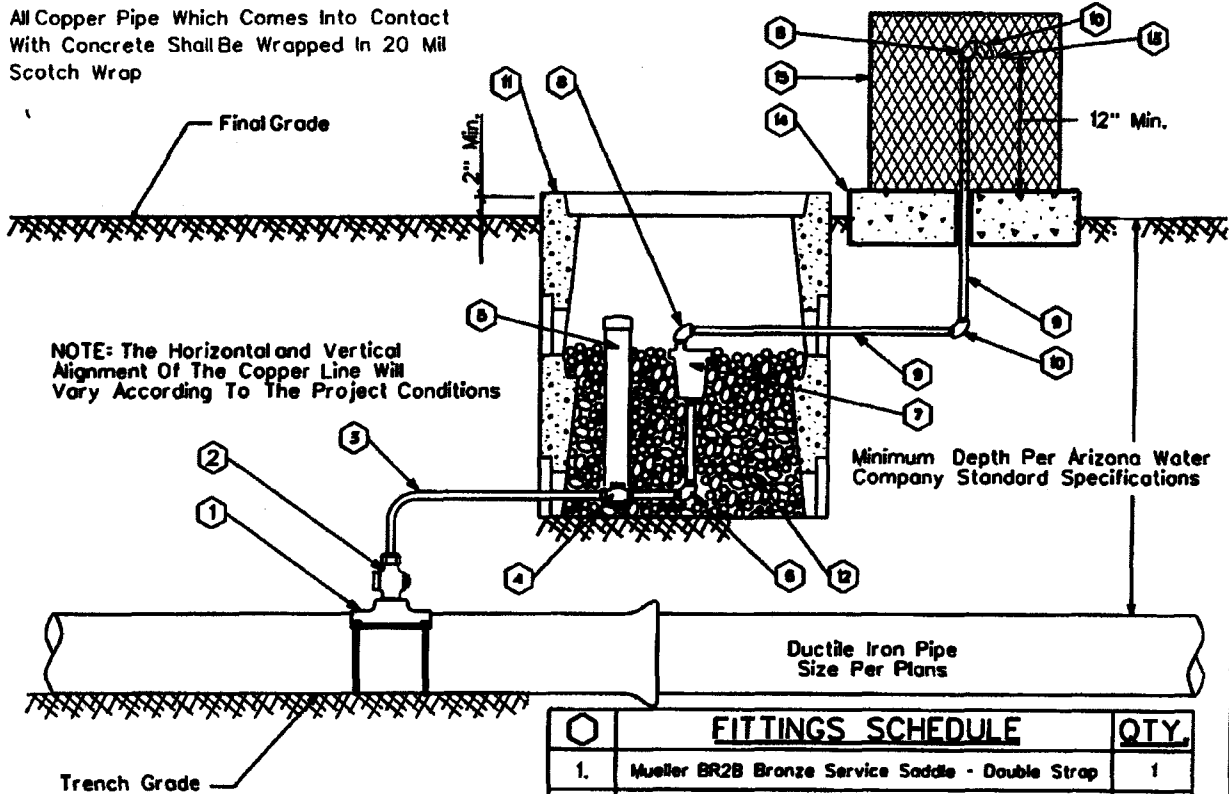
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1997	△ 08.24.2006	E-9-8-2
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All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped In 20 Mil Scotch Wrap



GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{1}{4}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

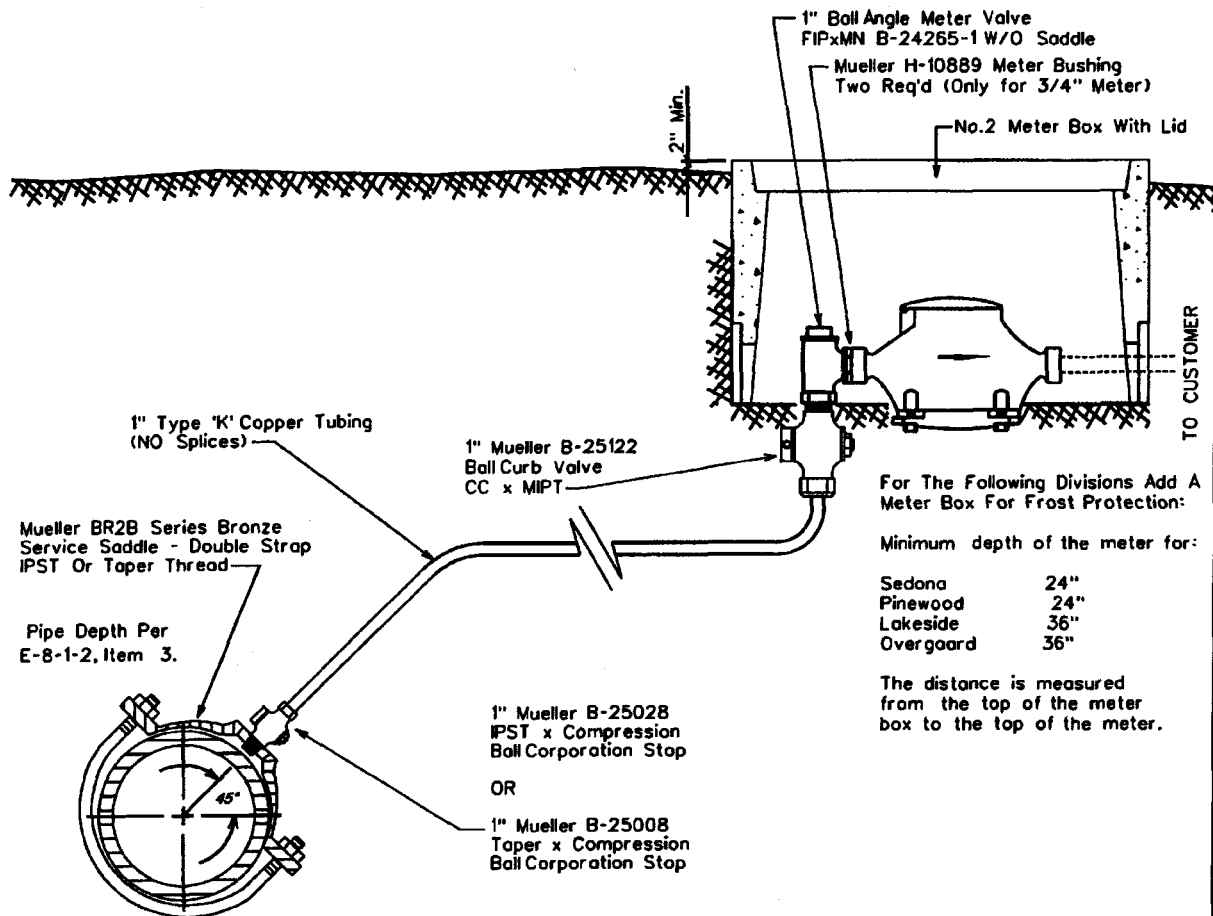
○	FITTINGS SCHEDULE	QTY.
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-2500B Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-2502B IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	$\frac{1}{2}$ " Brass Street Elbow	2
9.	$\frac{1}{2}$ " Galvanized Pipe - Length as req'd	2
10.	$\frac{1}{2}$ " Galvanized 90° El	2
11.	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrosible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardslock, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan	1

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 08.24.2006 E-9-8-3



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
taps on mains other than ductile iron is 12"

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

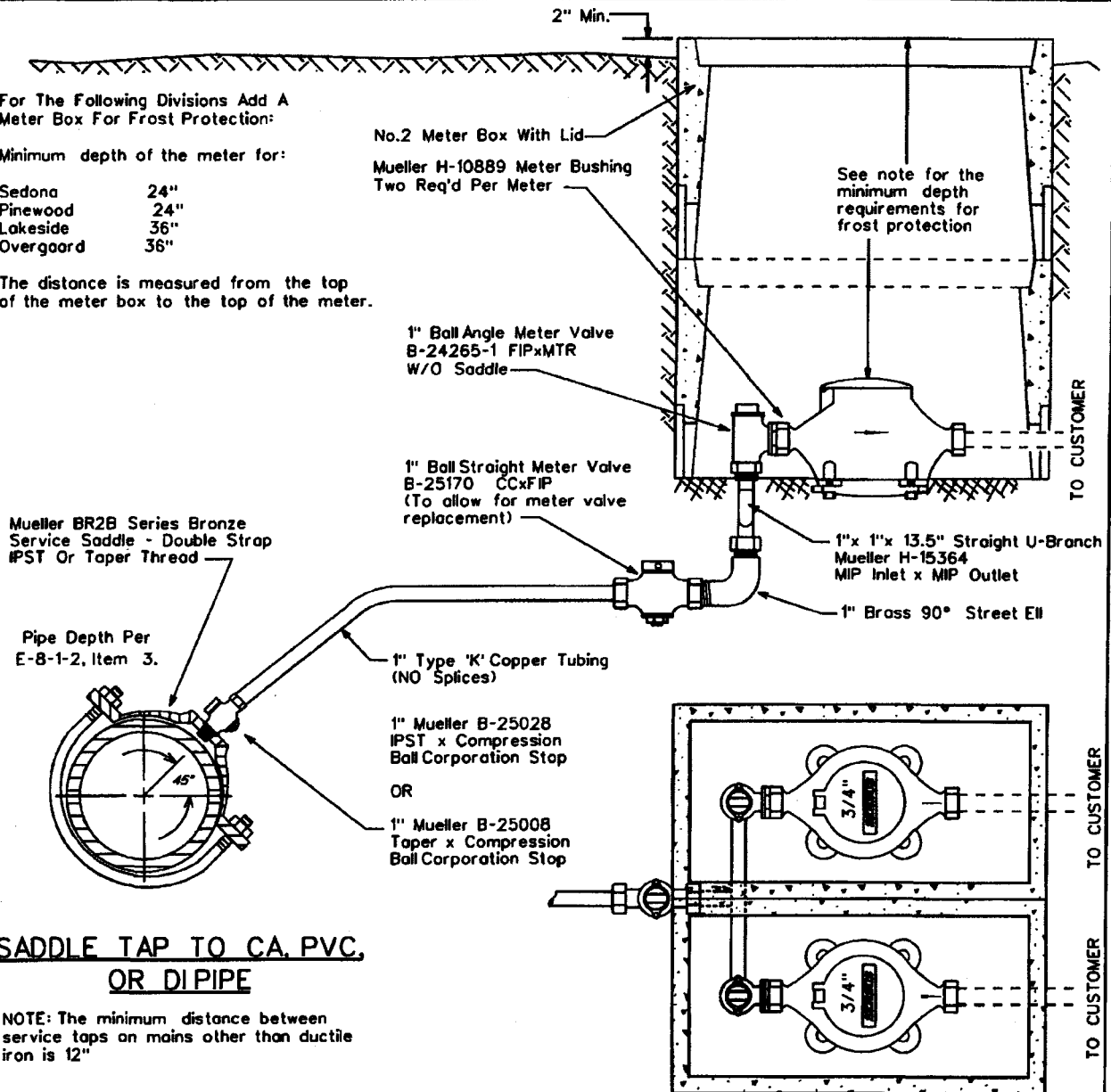
DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3/20/86	△ 03.17.2006	E-9-9-1
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For The Following Divisions Add A
Meter Box For Frost Protection:

Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top
of the meter box to the top of the meter.



**SADDLE TAP TO CA. PVC,
OR DI PIPE**

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

DOUBLE SERVICE CONNECTION FOR 3/4" METERS

DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3-20-86	△ 08.25.2006	E-9-10-1
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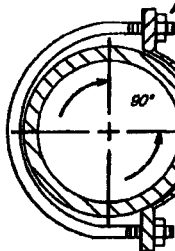
For The Following Divisions Add A
Meter Box For Frost Protection:

Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top
of the meter box to the top of the meter.

Mueller BR2B Series Bronze
Service Saddle - Double Strap
IPST Or Taper Thread



Pipe Depth Per
E-B-1-2, Item 3.

2" Type 'K' Copper Tubing
(NO Splices)

2" Mueller B-25028
IPST x Compression
Ball Corporation Stop

OR

2" Mueller B-25008
Taper x Compression
Ball Corporation Stop

SADDLE TAP TO CA. PVC, OR DI PIPE

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

No.2 Meter Box With Lid
1" Ball Angle Meter Valve
B-24265-1 FIPxMTR
W/O Saddle

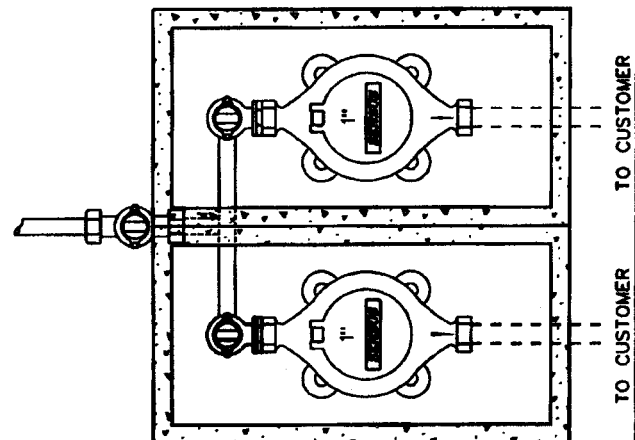
2" Mueller Ball Curb Valve
B-25172 CCxFIP
(To allow for meter valve
replacement)

See note for the
minimum depth
requirements for
frost protection

1"x 1"x 13.5" Straight U-Branch
Mueller H-15364
MIP Inlet x MIP Outlet

1" Brass 90° Street Ell

Mueller 47164
Brass Bushing
2" MIP x 1" FIP



NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET

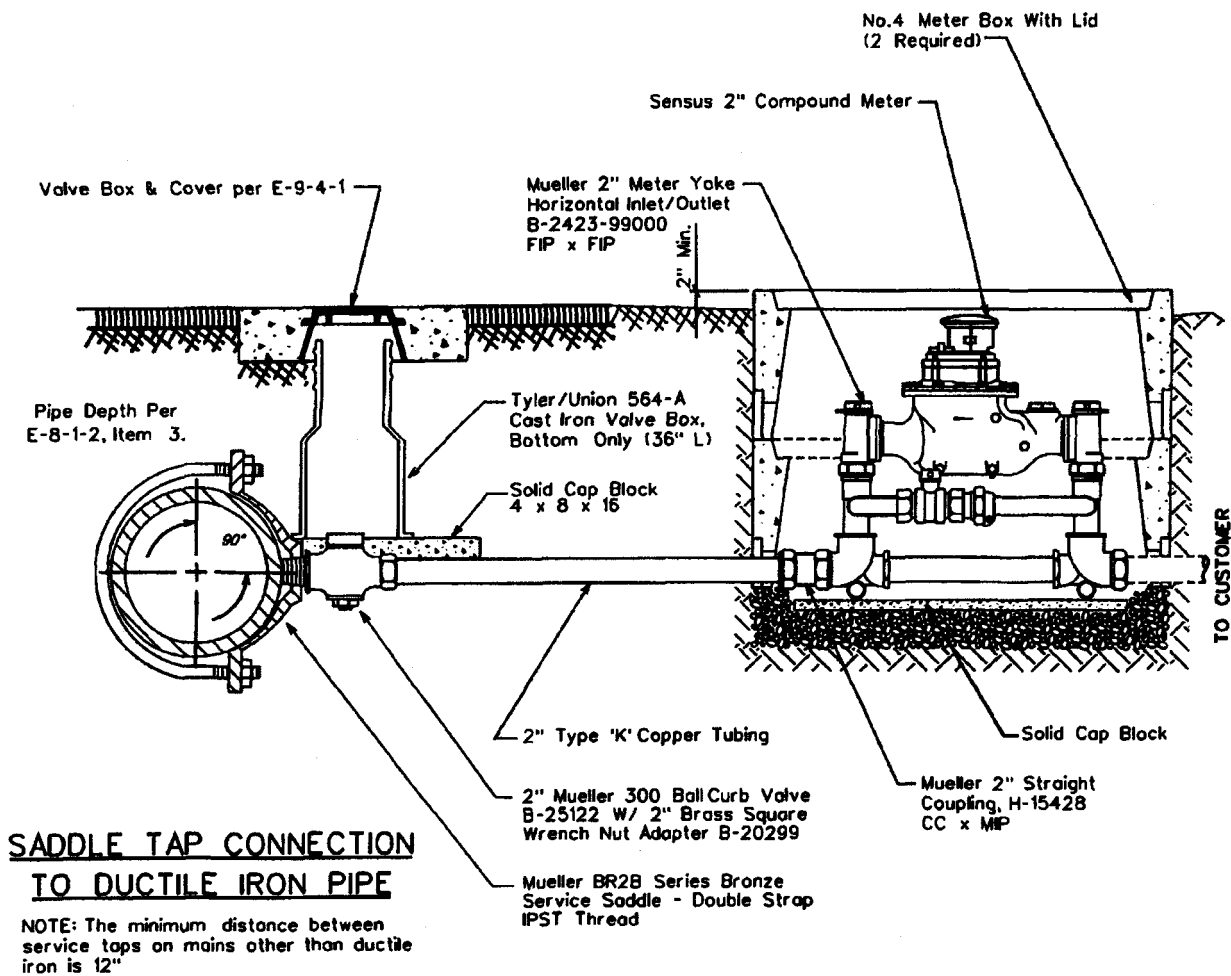
NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

DOUBLE SERVICE CONNECTION FOR 1" METERS

DRAWN BY: CB	APPROVED BY: M.W.	DATE: 03.17.2006	△ 08.29.2006	E-9-10-2
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NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET

NOTE:

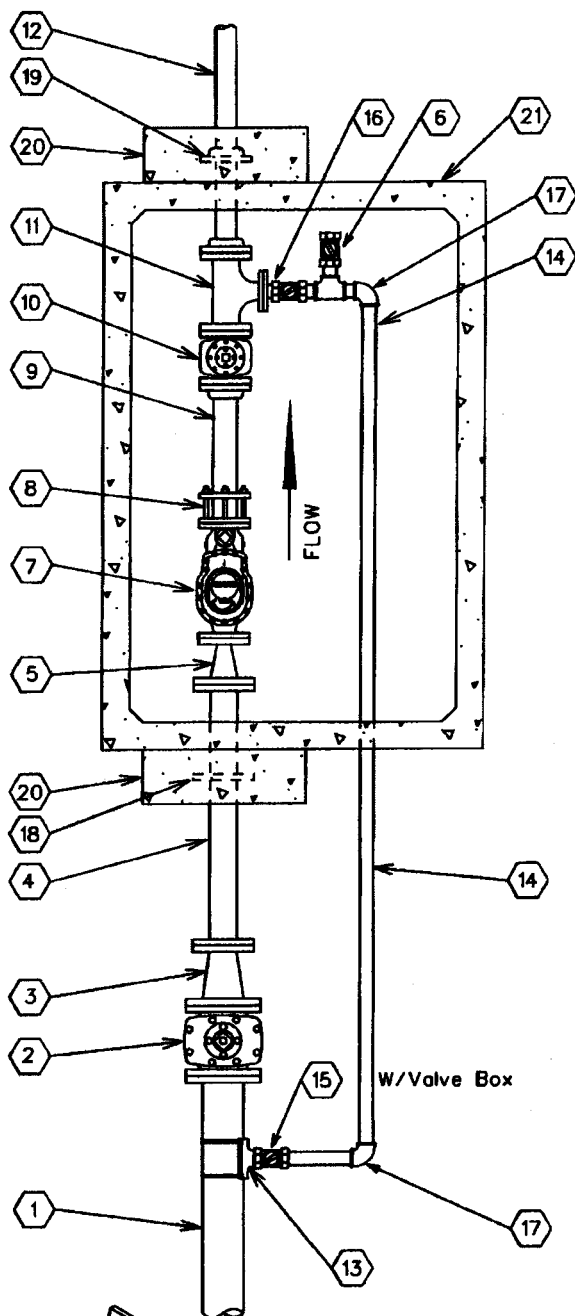
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

DRAWN BY:	APPROVED BY:	DATE:		
JW	M.W.	3/20/86	△ 08.29.2006	E-9-11-1



No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	4" x 3" Reducer flng
6.	2" Test Port
7.	3" Compound Meter
8.	3" F.C.A.
9.	3"x2'-0" D.I. Spool flng x pe
10.	3" Gate Valve flng
11.	3"x2" Flg Tee w/ 2" Companion Flange
12.	3"x4'-0" D.I. Spool flng x pe
13.	6"x2" Tapping Saddle
14.	2" Copper Pipe
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	2" Locking Ball Valve (normally closed)
17.	2" Mueller H-15526 90° Ell CC x CC
18.	4" Megalug
19.	3" Slip-On Welding Flange
20.	24"x24"x8" Conc. Thrust Block P.I.P.
21.	575-LA Conc. Vault

NOTE:

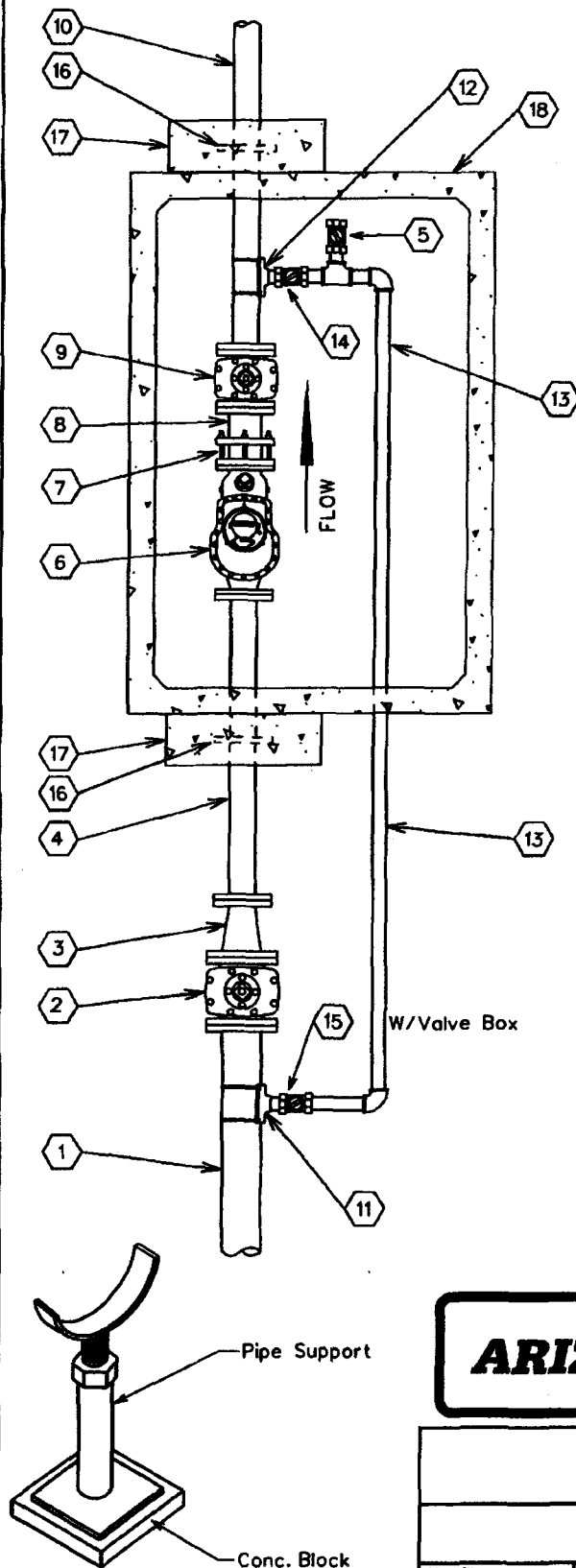
1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

3" COMPOUND METER

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-1
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve flng
10.	4"x4'-0" D.I.P. Spool flng x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

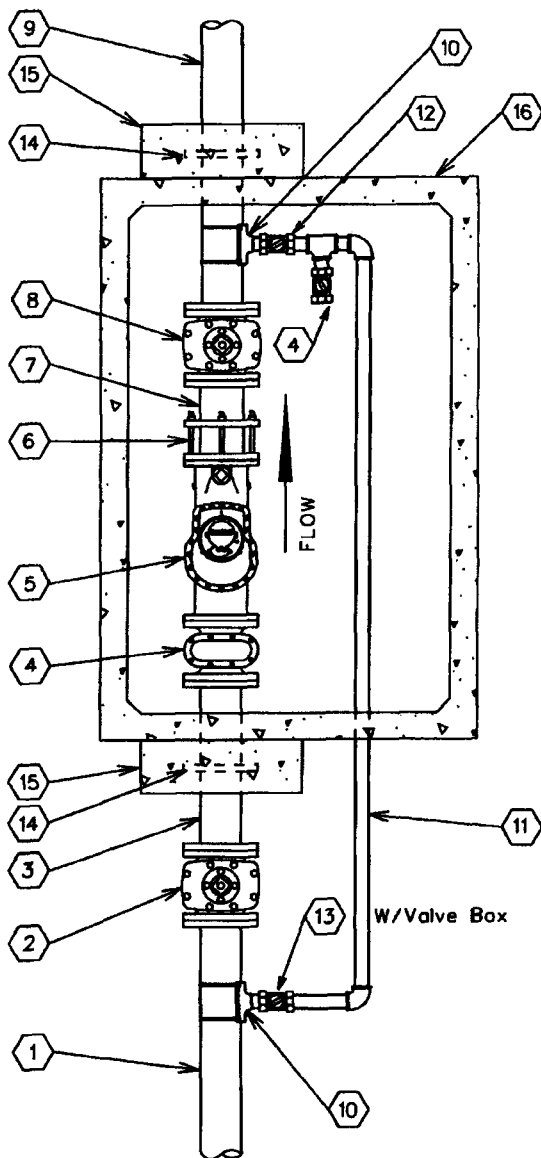
1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

4" COMPOUND METER

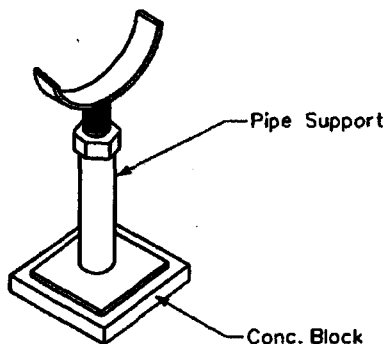
DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-2
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x 3'-0" D.I.P. Spool flng x pe
4.	2" Test Port
5.	6" Compound Meter
6.	6" F.C.A.
7.	6"x 1'-0" D.I.P. Spool flng x pe
8.	6" Gate Valve flng
9.	6"x 4'-0" D.I.P. Spool flng x pe
10.	6"x2" Tapping Saddle
11.	2" Copper Pipe
12.	2" Ball Valve / Locking (Normally Closed)
13.	2" Mueller B25122 Ball Valve w/B20299 Nut
14.	6" Megalug
15.	24"x24"x8" Conc. Thrust Block P.I.P.
16.	575-LA Conc. Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

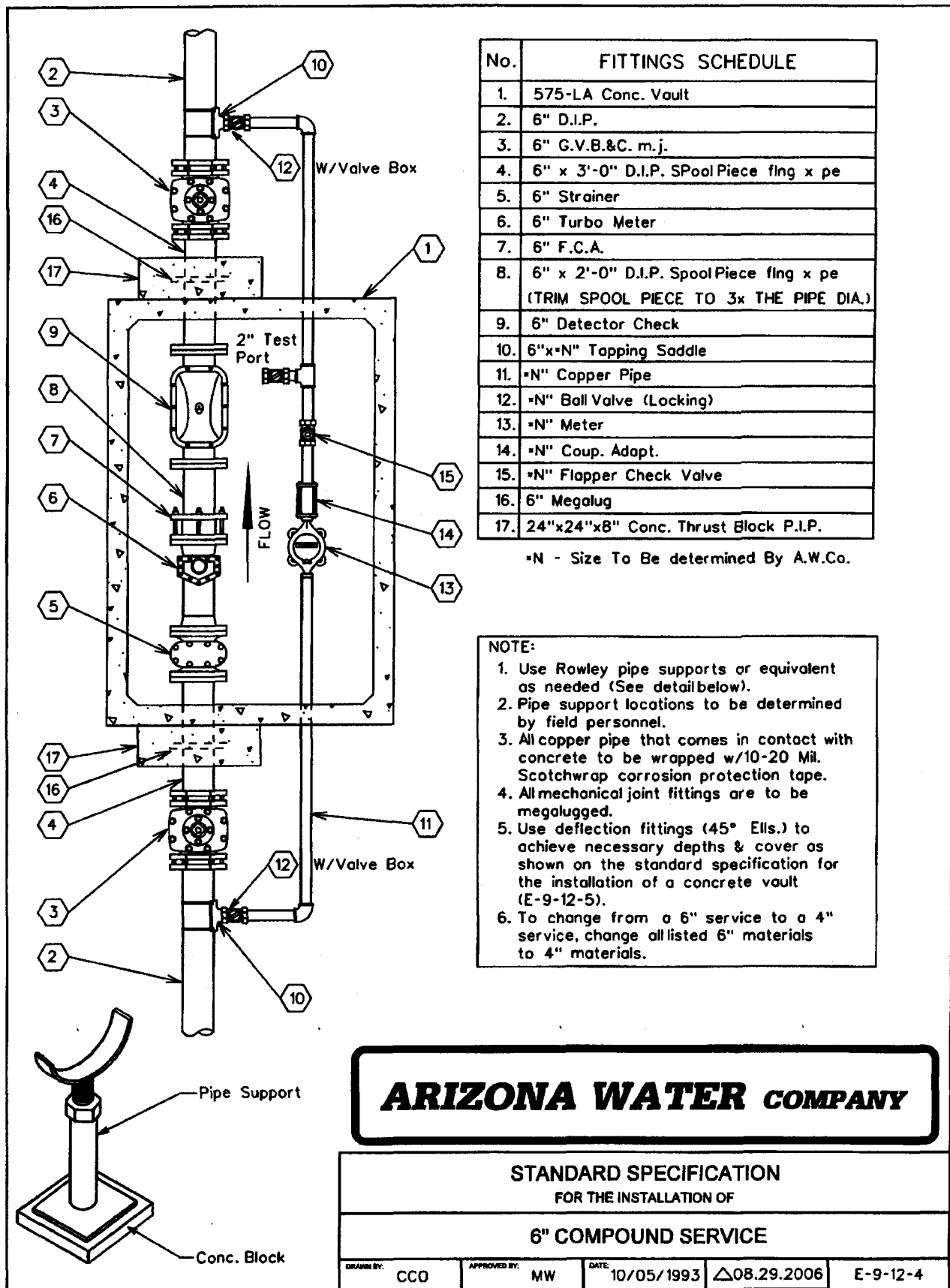


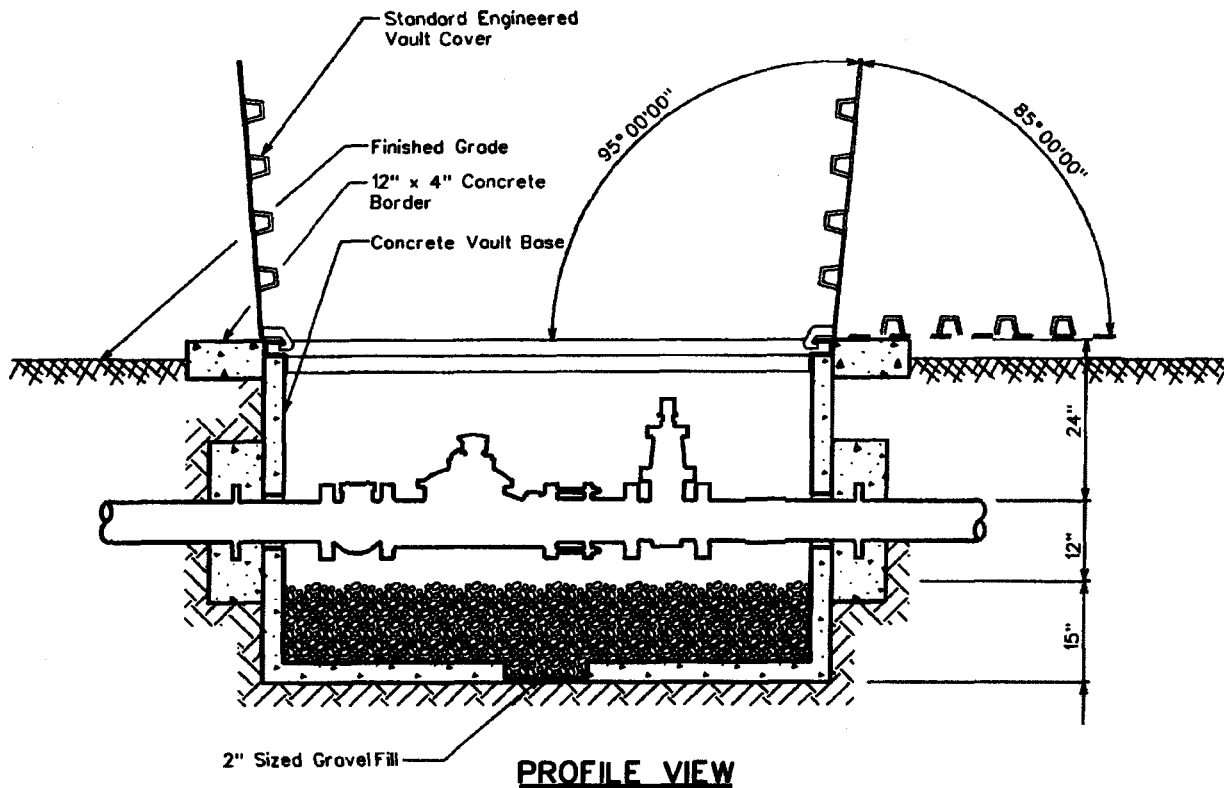
ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

6" COMPOUND METER

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-3
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CONCRETE VAULT & COVER SPECIFICATIONS

- Vault - Base No. 575-BL
 Cover - Standard Engineered Vault Cover
 . 4874 Aluminum Diamond Plate Cover
 For Non-Traffic Loading Areas
 Or
 . 4874 Galvanized Steel Diamond Plate
 Cover W/ H-20 Traffic Loading
 . Double Torsion Spring Assisted Doors W/
 Recessed Hasp & Safety Latches

NOTES

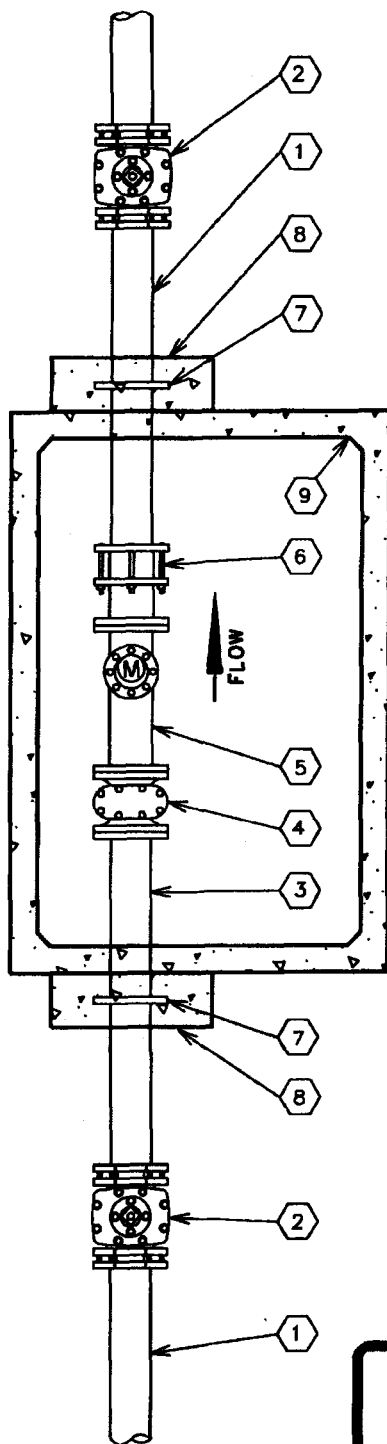
1. Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
2. Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
 FOR THE INSTALLATION OF

CONCRETE VAULT

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△ 05.17.2001	E-9-12-5
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No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

NOTE:

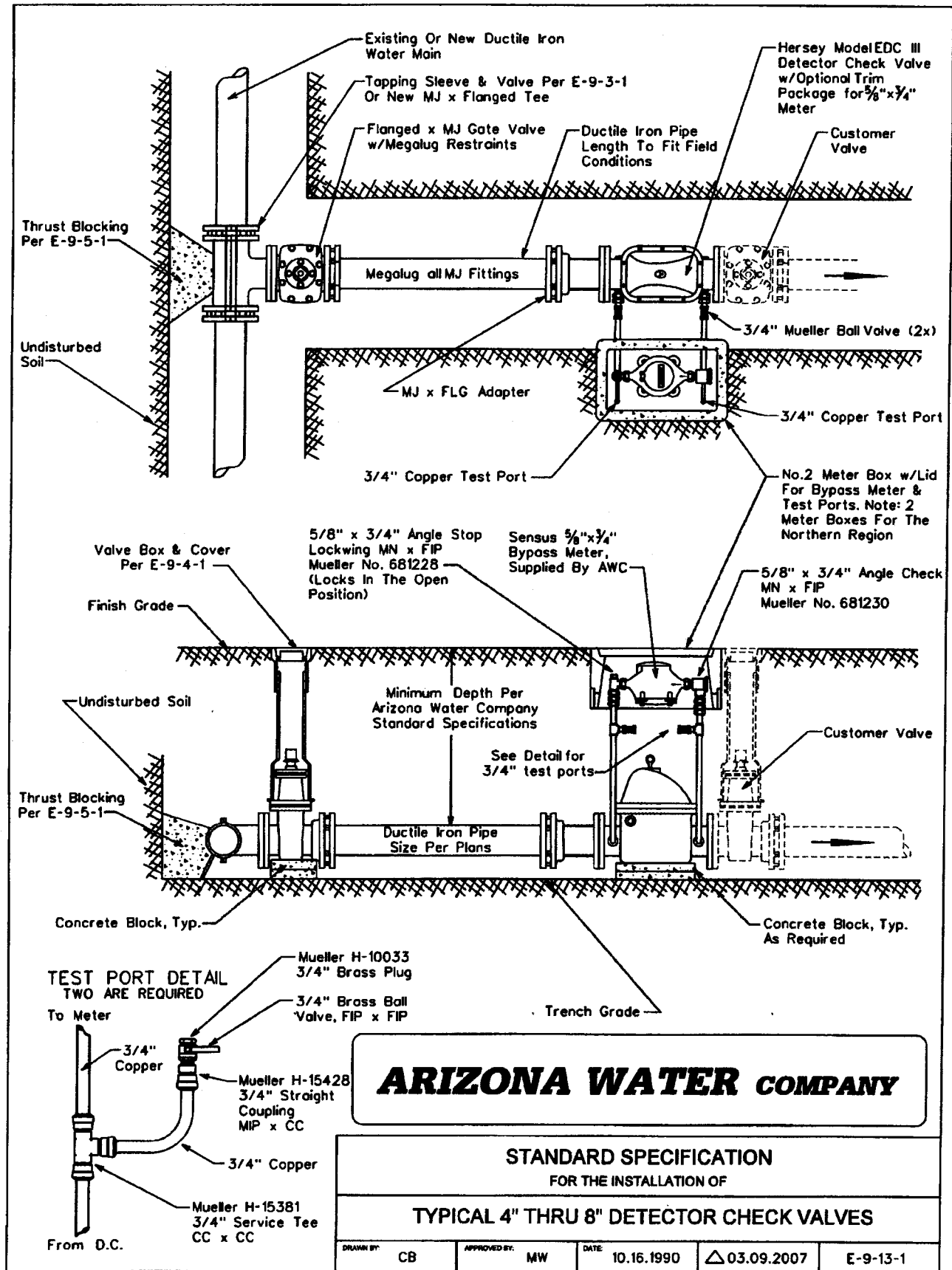
1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
2. Pipe support locations to be determined by field personnel.
3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings to are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

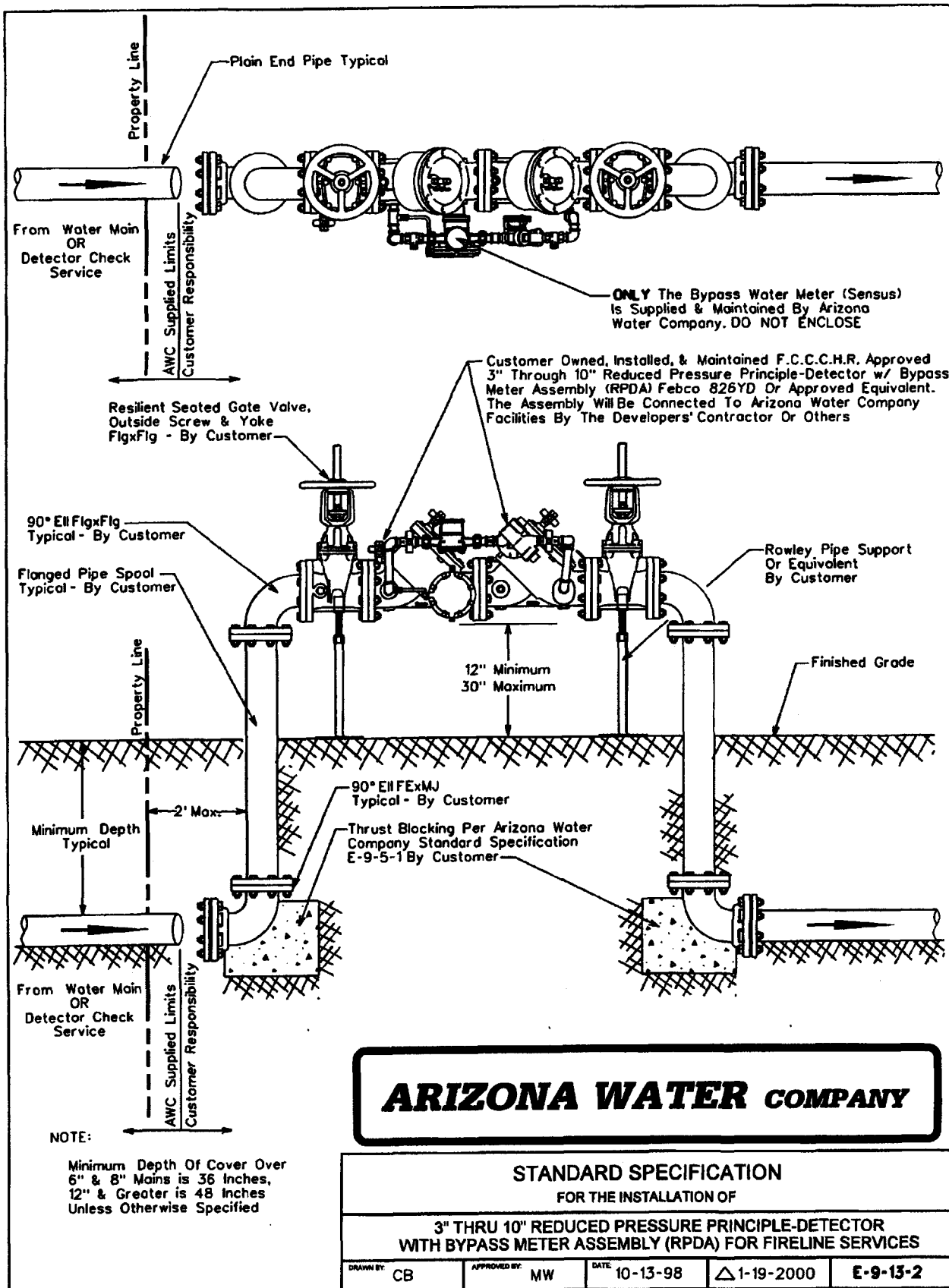
ARIZONA WATER COMPANY

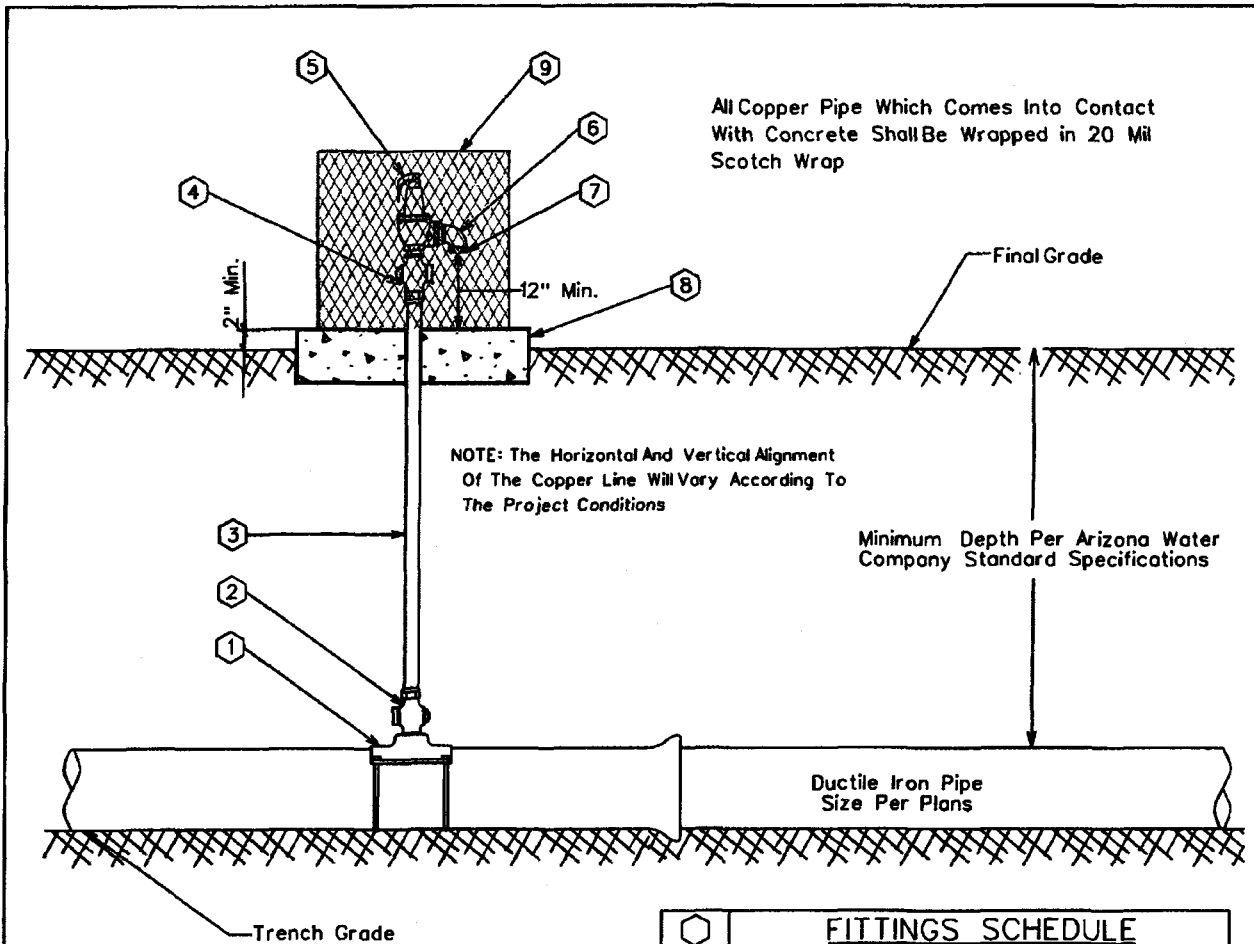
**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

NON-POTABLE PROPELLER METER

DRAWN BY: JPK	APPROVED BY: MW	DATE: 7-20-95	△	E-9-12-6
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NOTE:

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

○	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrosible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

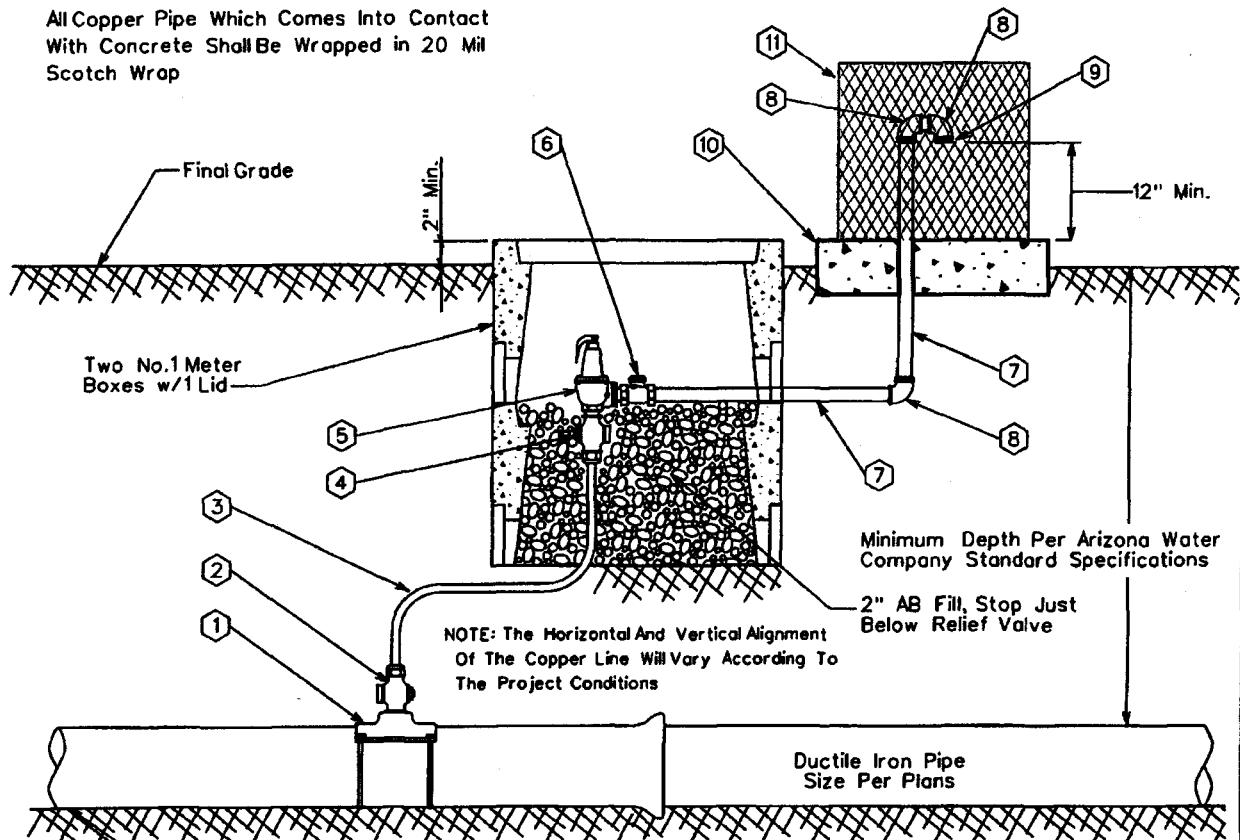
ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 △ 08.29.2006 E-9-14-1

All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped in 20 Mil Scotch Wrap



NOTE: Trench Grade

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

NOTE: The Horizontal And Vertical Alignment Of The Copper Line Will Vary According To The Project Conditions

Minimum Depth Per Arizona Water Company Standard Specifications

2" AB Fill, Stop Just Below Relief Valve

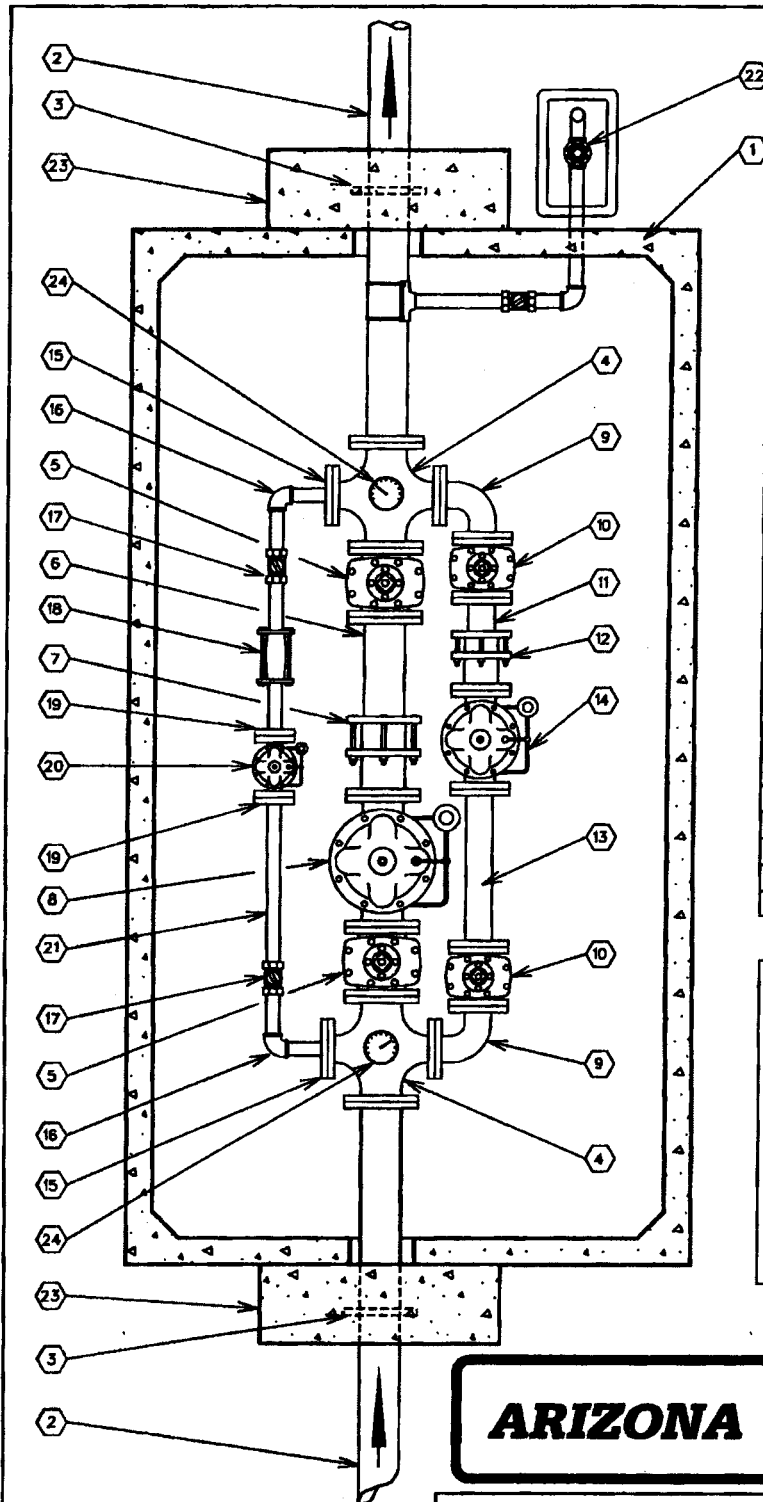
○	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrosible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 08.29.2006 E-9-14-2



No.	FITTINGS SCHEDULE
1.	612 LA Conc. Vault (See Note 3)
2.	6"x6'-0" D.I.P. Spool Fig.xP.E.
3.	6" Megalug (Thrust Anchor)
4.	6"x4" Cross Fig.
5.	6" Gate Valve Fig.
6.	6"x2'-0" D.I.P. Spool Fig.xP.E.
7.	6" Fig. Coup. Adapt. (Rockwell 913)
8.	6" High Flow Pressure Reducing Valve Fig.
9.	4" 90° El. Fig.
10.	4" Gate Valve Fig.
11.	4"x1'-0" D.I.P. Spool Fig.xP.E.
12.	4" FLg. Coup. Adapt. (Rockwell 913)
13.	4"x2'-0" D.I.P. Spool Fig.
14.	4" Medium Flow Pressure Reducing Valve Fig.
15.	2"x9" O.D. Reducing Fig. (I.P.T.)
16.	2" 90° El. F.I.P.
17.	2" Ball Valve F.I.P.
18.	2" Comp. Coup. (Rockwell 410)
19.	2" Companion Fig. (I.P.T.)
20.	2" Low Flow Pressure Reducing Valve Fig.
21.	2" Sched. 40 Stl. Pipe
22.	2" Pressure Relief Valve (See E-9-14-1)
23.	12"x36"x36" Conc. Thrust Block P.I.P.
24.	Pressure Gauge w/shut off valve

NOTE:

1. Use Rowley pipe supports or equivalent as needed. (See E-9-12-4)
2. Pipe support locations to be determined by field personnel.
3. Vault-612 LA top section w/12" Dia. sump hole. Cover-concrete slab top w/(4) 4'-0" x2'-6" aluminum spring loaded hinged style covers for non-traffic loading areas. For areas w/low density traffic, cover is to be designed for H-20 traffic loading.
4. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
5. Use deflection fittings (45° Els.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

PRESSURE REDUCING STATION

DRAWN BY:

JPK

APPROVED BY:

MW

DATE:

11-16-88

△ 9-27-95

E-9-15-1

1. Specific Items To Be Painted Deer-O Pure White Enamel:

- A. All Booster Pumps.
- B. All Electrical Motors And Gas Engines.
- C. Well Pump Discharge Heads.
- D. Electrical Panel.

2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:

- A. Well Shelter.

3. Specific Items To Be Painted OSHA Orange:

- A. Electrical Conduit.

4. All Other Items To Be Painted With Either:
(At Manager's Discretion)

- A. Cholla Green
- B. Forest Green
- C. Sonora Beige
- D. Red Rock
- E. Rock Brown
- F. Deer-O Pure White
- G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

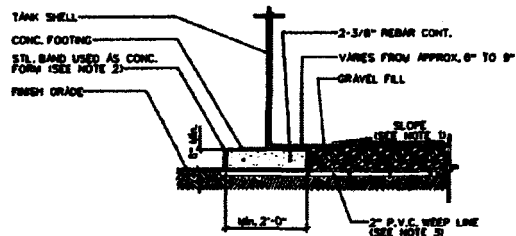
PAINT COLOR SELECTION

DRAWN BY: CCO	APPROVED BY:	DATE 3/20/1986	△ 2/13/2001	E-9-16-1
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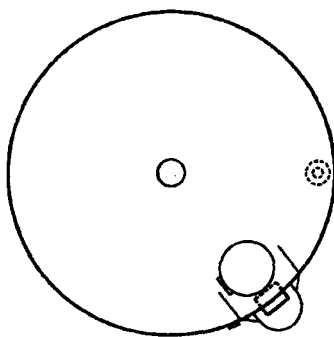
1. Tank shall conform to ARWA Specification D100-84 with exceptions noted below.
 2. $\frac{1}{4}$ " minimum shell plate.
 3. Minimum of 12" diameter roof vent, screened with No. 16 non-corrosible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
 4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above water base high water level.
 5. Storage tank shall be placed upon adequately compacted base material.
 6. 8" minimum floor mounted tank drain outlet to be located close to the outer shell.
 7. Tank and related fittings shall be enclosed with a 6 foot chain link fence with lockable gates and anti-personnel wire on top of fence.
 8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.
 9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlap the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and bolted in place. Tanks larger than a 80 foot diameter require 2 shell manholes.
 10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ " of shell with 10 gauge sheet steel.
 11. Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
 12. The following information will be included with application for approval to construct:
 1. Tank location _____
 2. Tank height _____
 3. Tank diameter _____
 4. Tank capacity _____
 5. Method of water level control _____
 13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
 14. The welded steel storage tank will be coated as per ARWA Specification D102, and N.S.F. Standard 81.
- *Exceptions to ARWA Specification D100-84

FOUNDATION NOTES

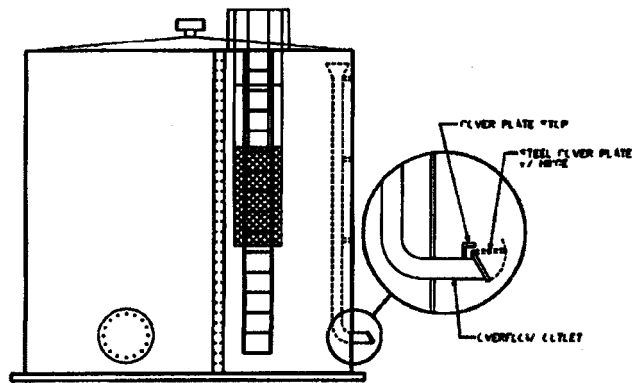
1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN $\frac{1}{8}$ ".
3. INSTALL 8-2" DIA. x 10'-0" P.V.C. WEIR LINES, EQUALLY SPACED (EVERY 45°), PERFORATE 8'-0" OF LINE WITH $\frac{1}{2}$ " DIA. HOLES @ 8" O.C. PLUG INTERIOR END OF LINE w/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



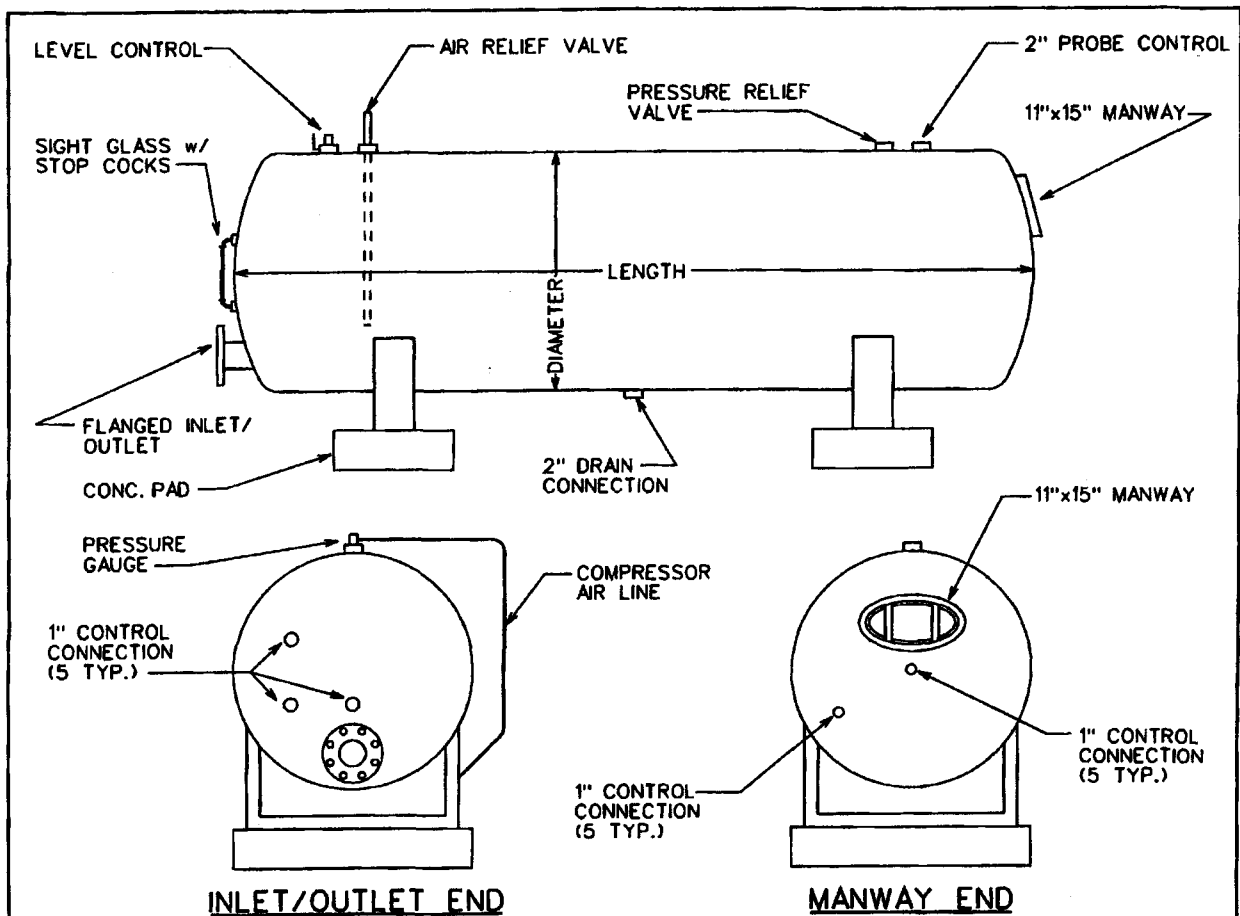
PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

DRAWN BY: JPK	APPROVED BY: MJW	DATE: 10-17-88	2-12-96	E-9-17-1
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1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
 1. Tank Location _____
 2. Tank Length _____
 3. Tank Diameter _____
 4. Tank Capacity _____
 5. Maximum Working Pressure _____

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

DRAWN BY: JPK	APPROVED BY: MW	DATE: 3-20-1986	△ 01.16.2007	E-9-18-1
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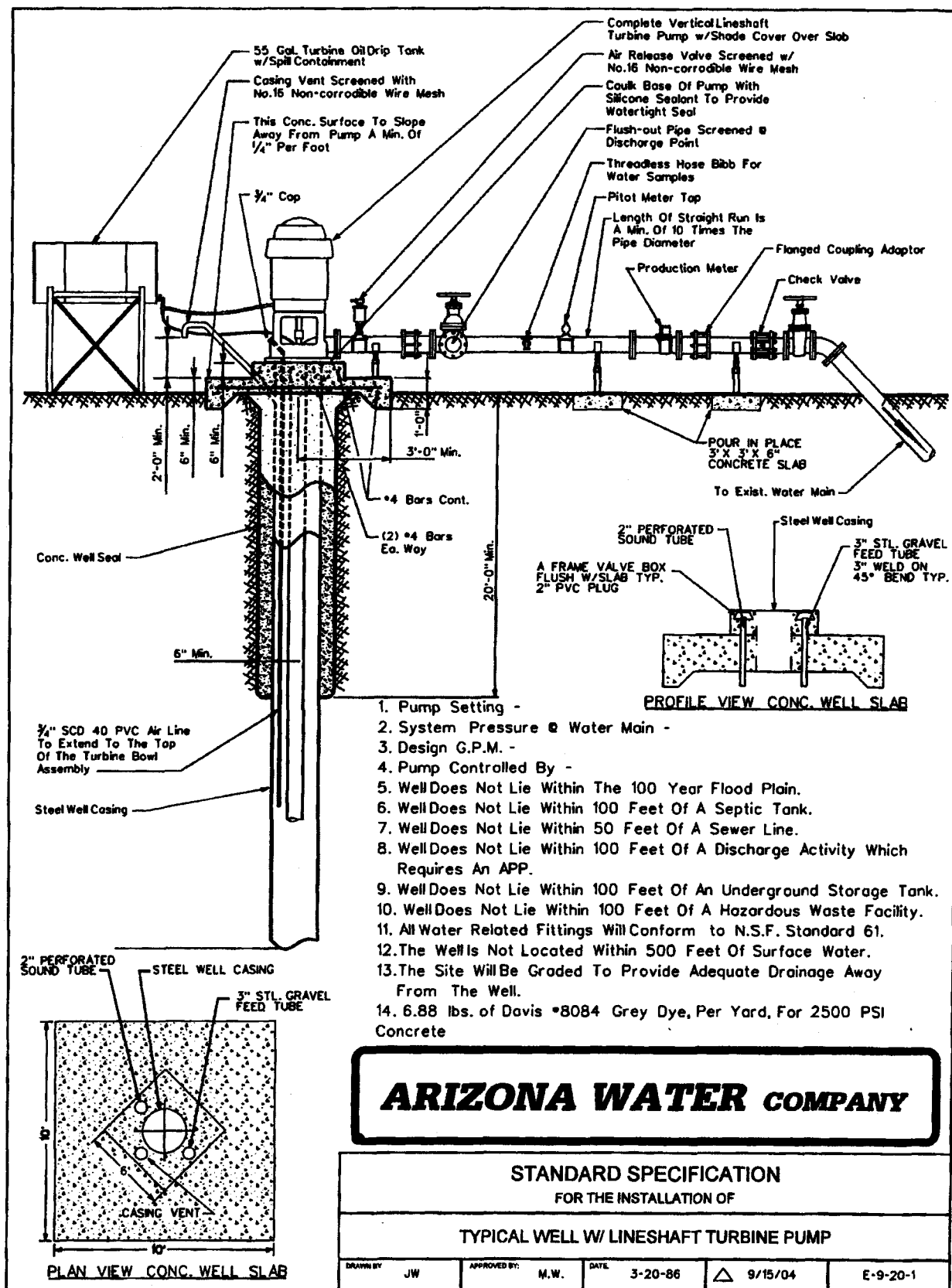
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CONVERTED
TO
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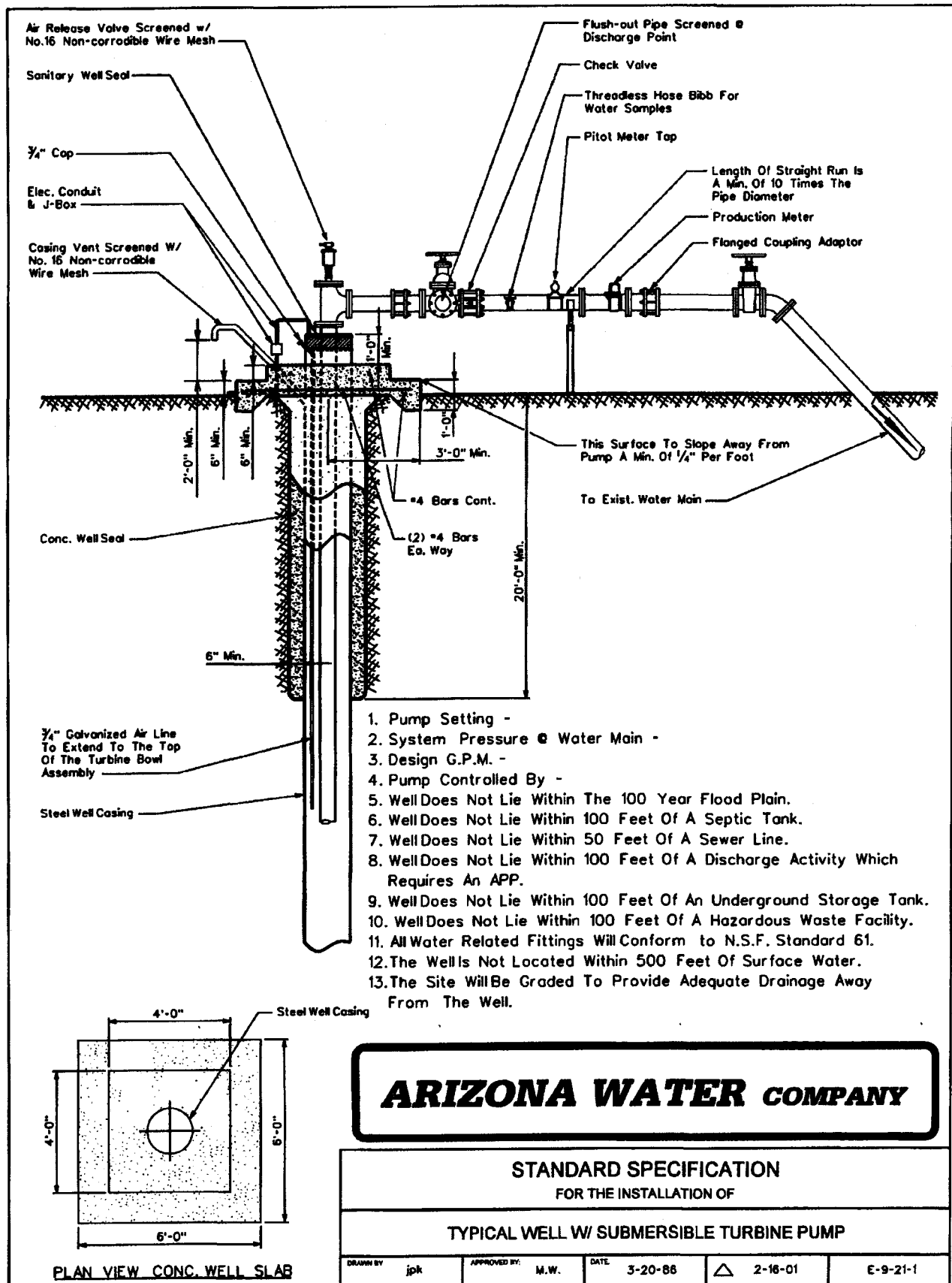
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WELL SHELTER

DRAWN BY: CB	APPROVED BY:	DATE 03.20.1986	△ 04.03.2001	E-9-19-1
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL WELL W/ SUBMERSIBLE TURBINE PUMP

DRAWN BY jpk	APPROVED BY M.W.	DATE 3-20-88	2-16-01	E-9-21-1
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All New Purchases To Conform To The Following:

Column Pipe

4" I.D. - 8	Threads	Per	Inch	Tapered	3/4"	Per	Foot	Right	Hand
6" I.D. - 8	"	"	"	"	"	"	"	"	"
8" I.D. - 8	"	"	"	"	"	"	"	"	"
10" I.D. - 8	"	"	"	"	"	"	"	"	"
12" I.D. - 8	"	"	"	"	"	"	"	"	"
14" I.D. - 8	"	"	"	"	"	"	"	"	"

Oil Tube - Peerless Type

1 1/2" O.D. - 14	Threads	Per	Inch	Right	Hand
2" O.D. - 12	"	"	"	"	"
2 1/2" O.D. - 10	"	"	"	"	"
3" O.D. - 10	"	"	"	"	"
3 1/2" O.D. - 10	"	"	"	"	"
4" O.D. - 10	"	"	"	"	"

Line Shaft

3/4" O.D. - 10	Threads	Per	Inch	Left	Hand
1" O.D. - 14	"	"	"	"	"
1-3/16" O.D. - 10	"	"	"	"	"
1-1/2" O.D. - 10	"	"	"	"	"
1-11/16" O.D. - 10	"	"	"	"	"
1-15/16" O.D. - 10	"	"	"	"	"
2-3/16" O.D. - 10	"	"	"	"	"
2-7/16" O.D. - 8	"	"	"	"	"

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY:

CCO

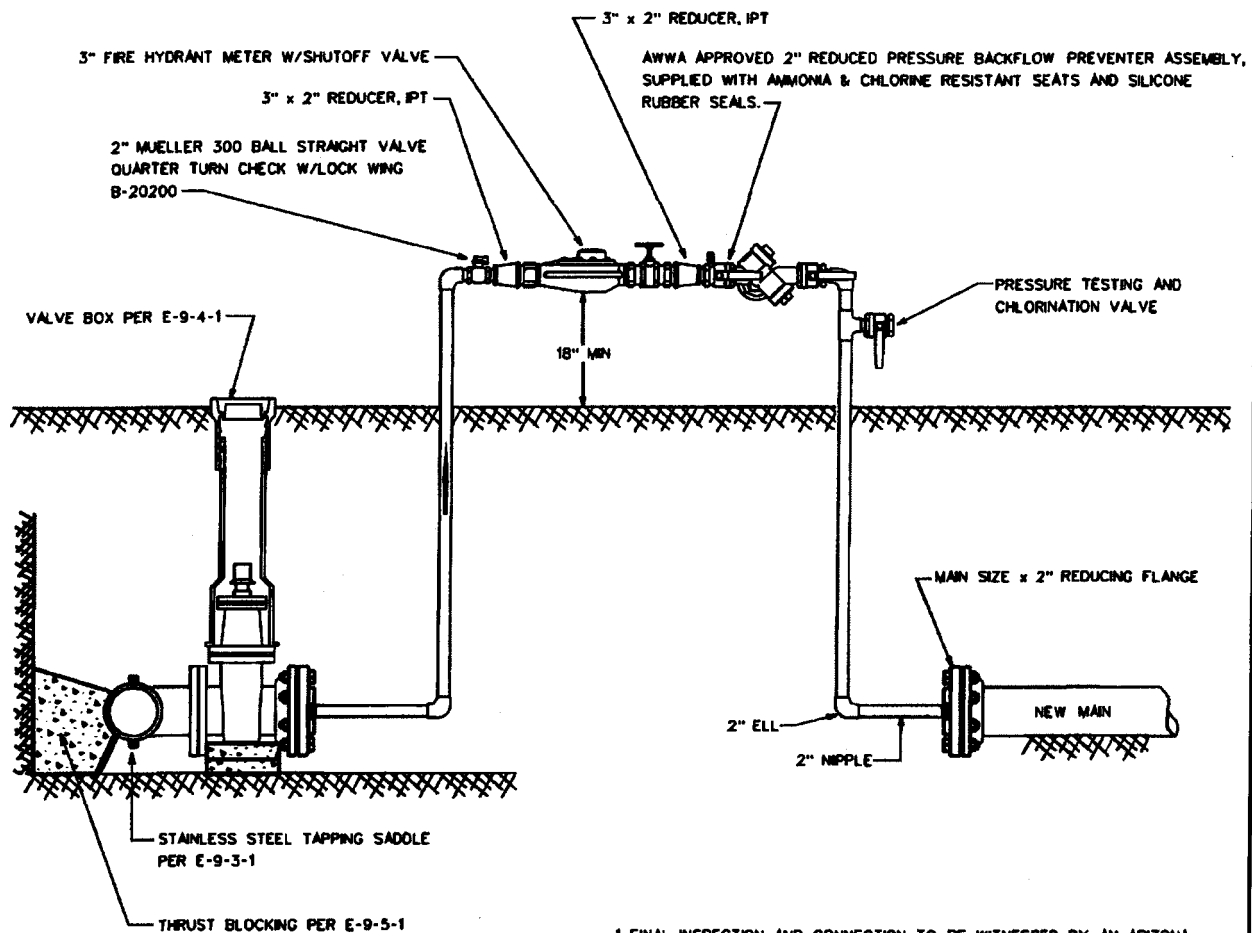
APPROVED BY:

DATE:

3/20/1996

△ 2/13/2001

E-9-22-1



1. FINAL INSPECTION AND CONNECTION TO BE WITNESSED BY AN ARIZONA WATER COMPANY REPRESENTATIVE.
2. REDUCING FLANGES TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP FOR TEMPORARY METER DOWNSTREAM OF THE REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

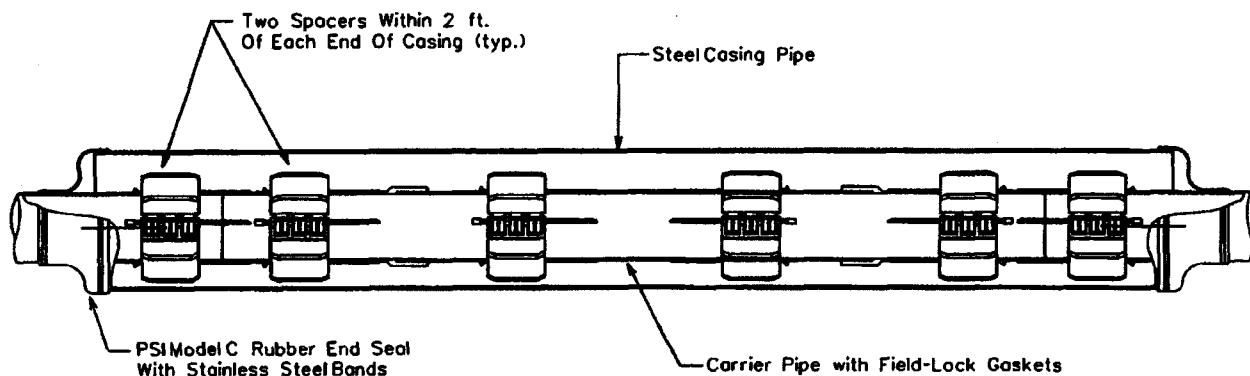
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

HOT TAP & JUMPER METER CONNECTION

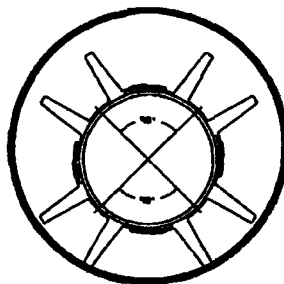
DRAWN BY: CB	APPROVED BY: MJW	DATE: 05.14.2004	△
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E-9-23-1



CROSS SECTION

The casing spacers shall be the PSIRanger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



SECTION CUT

End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seals as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

*Thickness Of Skid To Extend A Minimum of 1/2" Above The O.D. Of The Pipe Bell or Gland.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6"	16"	15.25"	STD.	.375	*x4x12
8"	18"	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	*x4x12
16"	28"	27.25"	STD.	.375	*x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	*x4x12
30"	48"	47.25"	STD.	.375	*x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: CB	APPROVED BY:	DATE: 3/20/1996	09.27.2006	E-9-24-1
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CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCORE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorination System as manufactured by ARCH Chemicals, 501 Main Street, P.O. Box 5204, Norwalk, CT 06850-5204.

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

COMPOUNDS - The Chlorination system shall have the following components:
A. 1-3" ARCH Chemical solid calcium hypochlorite tablet feeder

1. Chemical Melting Pump
2. Pump Suction Connection
3. Inlet Pressure Regulator
4. Inlet Water Pressure Gauge
5. Inlet Water Pressure Gauge
6. Inlet Water Solenoid Valve
7. Inlet Shut-Off Valve
8. Inlet Pressure Gauge
9. Inlet Water Pressure Gauge
10. Inlet Water Solenoid Valve
11. Inlet Tubing Connection
12. Dry Chemical Hopper
13. Suction Line
14. Electrical Control Box With Power On/Off
15. Electric Motor
16. Electric Motor
17. Inlet Water Solenoid Valve
18. Inlet Water Solenoid Valve
19. Inlet Water Solenoid Valve
20. Inlet Water Solenoid Valve
21. Inlet Water Solenoid Valve
22. Inlet Water Solenoid Valve
23. Inlet Water Solenoid Valve

single phase power.

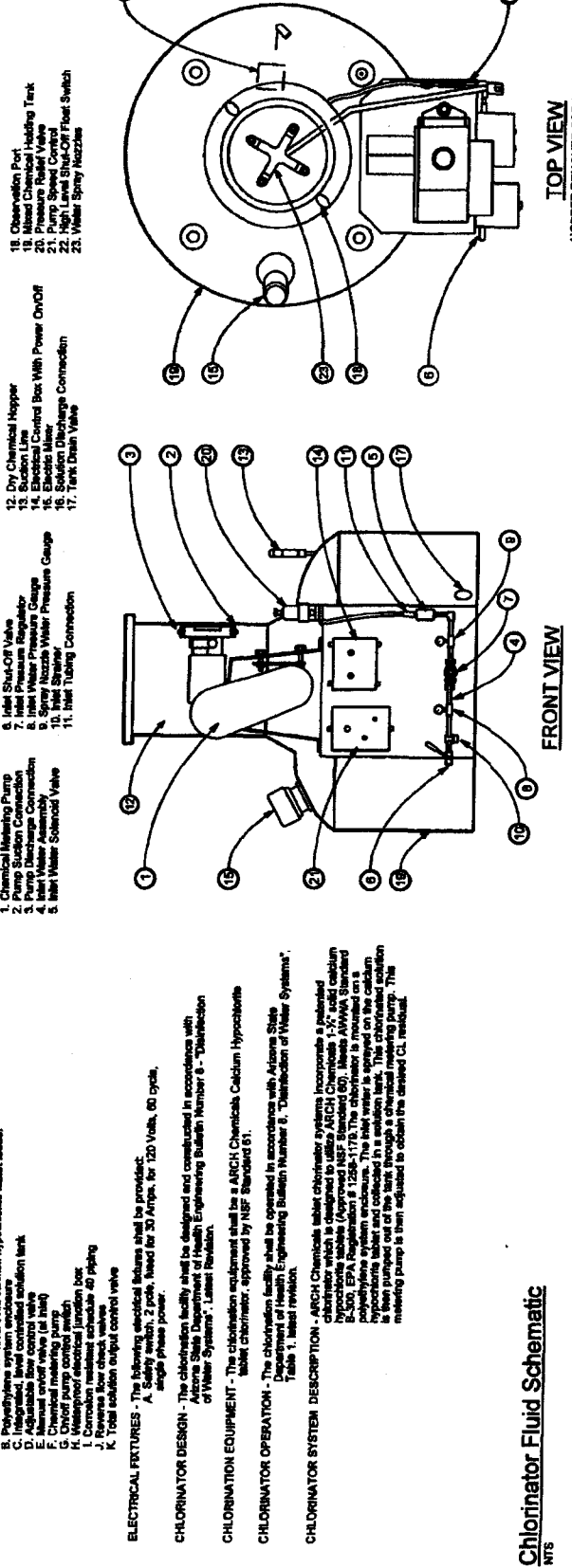
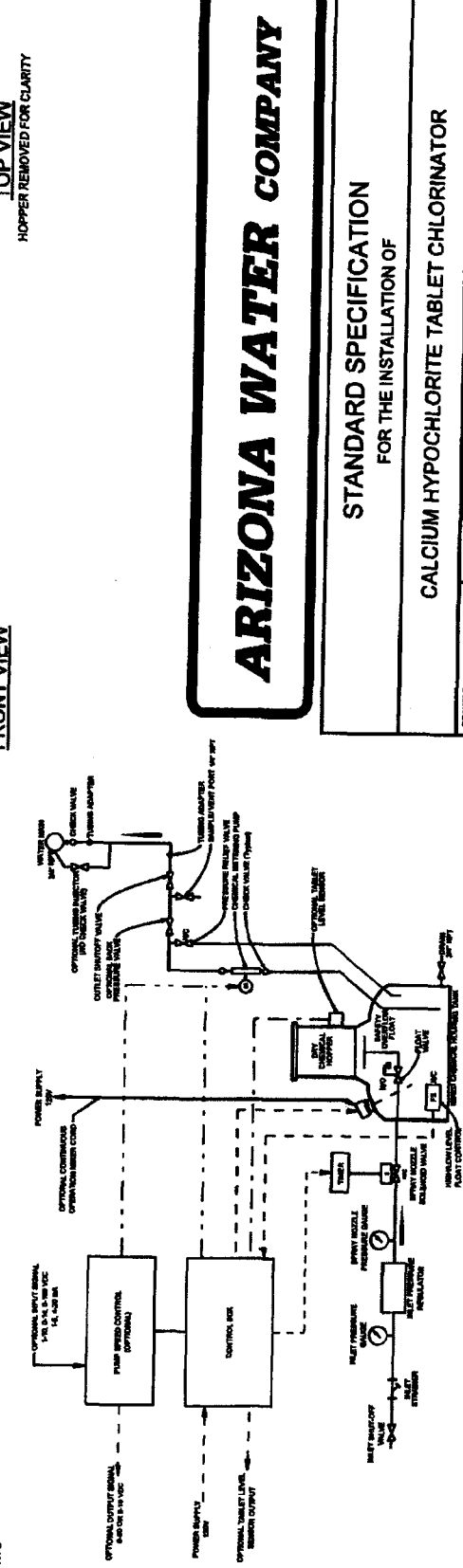
CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Arizona State Department of Health Engineering Bulletin Number 6 - "Distribution of Water Systems", Latest Revision.

© 1999 by The McGraw-Hill Companies, Inc.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARICH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR SYSTEM DESCRIPTION. ARCH Chemicals tablet chlorinator systems incorporate a patented design which is designed to utilize ARCH Chemicals 1-3" wet calcium hypochlorite tablets (ARCH Chemicals AWHW Standard B-300, EPA Registration # 1258-1178). The chlorine gas is released from the tablets and passes through a polyethylene system enclosure. The inlet water is sprayed on the calcium hypochlorite system enclosure. The chlorine gas and water combine to form hypochlorous acid and collect in a siphon tank. This chlorinated solution is then pumped out of the tank through a chemical metering pump. The metering pump is then adjusted to obtain the desired CL residual.

Chlorinator Fluid Schematic
NTS



NTS

FRONT VIEW

TOP VIEW

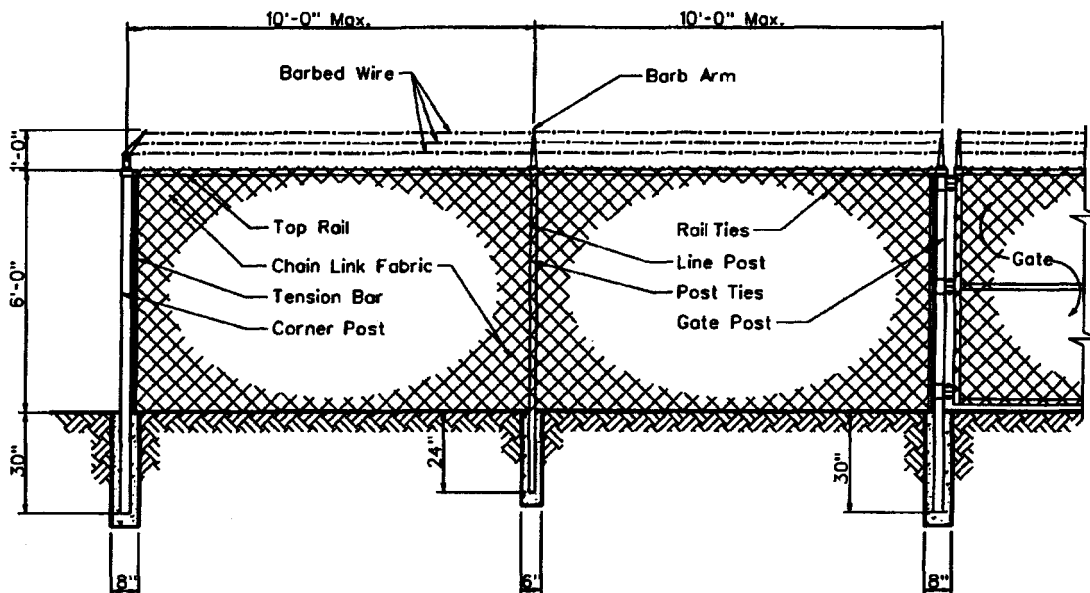
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STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

FLIGHT CONTROLLER <small>FLIGHT CONTROLLER SIGNATURE REQUIRED</small>	PREPARED BY: CB	APPROVED BY: MW	DATE: 02-08-2000	△	E-925-1



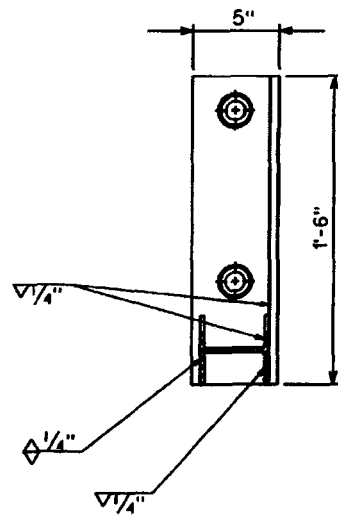
Line Post:	1-7/8" O.D.	1.74 lbs. P/L.F.	ASTM A-256
End Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Corner Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Gate Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Top Rail:	1-5/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Chain Link Fabric:	9 Ga. 2" Mesh Galv. Before Weave		
Selvage:	Barb/Knuckle		
Fittings:	Pressed Steel		
Barb Wire:	2-1/2 Ga./2 Point		
Barb Arm:	1 Piece/45° Arm		
Tension Wire:	9 Ga./Galv.		
Line Post Set:	6"x24" In Concrete		
Terminal Post Set:	8"x30" In Concrete		

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY: CCO	APPROVED BY: MW	DATE: 7/7/1992	△ 2/9/2001	E-9-26-1
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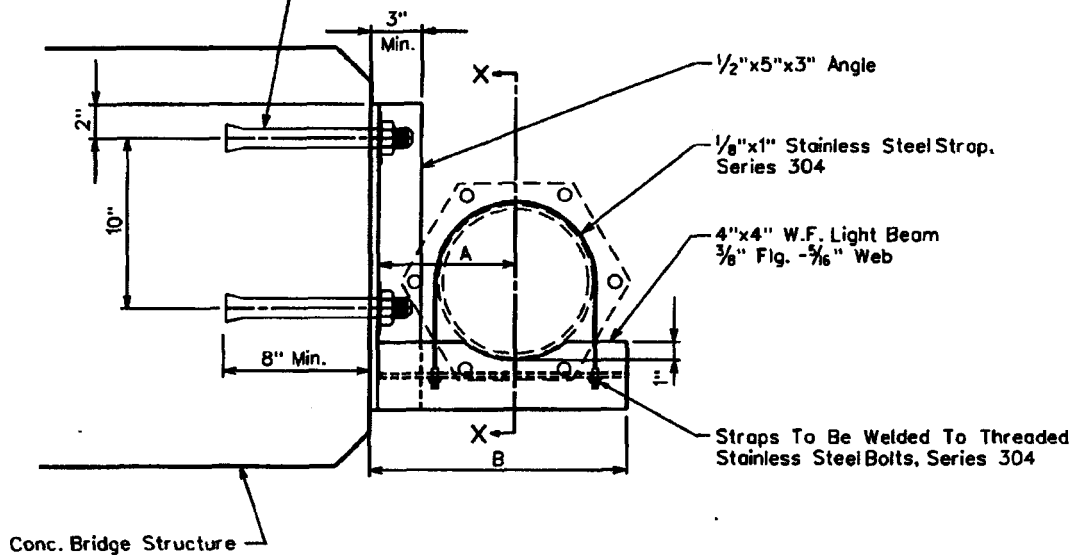
SECTION X-X

NOTES

1. Minimum 2 Supports Per Joint Of Pipe.
2. All Bolts Shall Have A Lock Washer Under The Nut.
3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	A	B
8"	8"	15"
10"	9"	17"
12"	10"	19"

1/8"x12" Stainless Steel Wedge Bolts, Series 304



SUSPENSION DETAIL

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

DRAWN BY:

JPK

APPROVED BY:

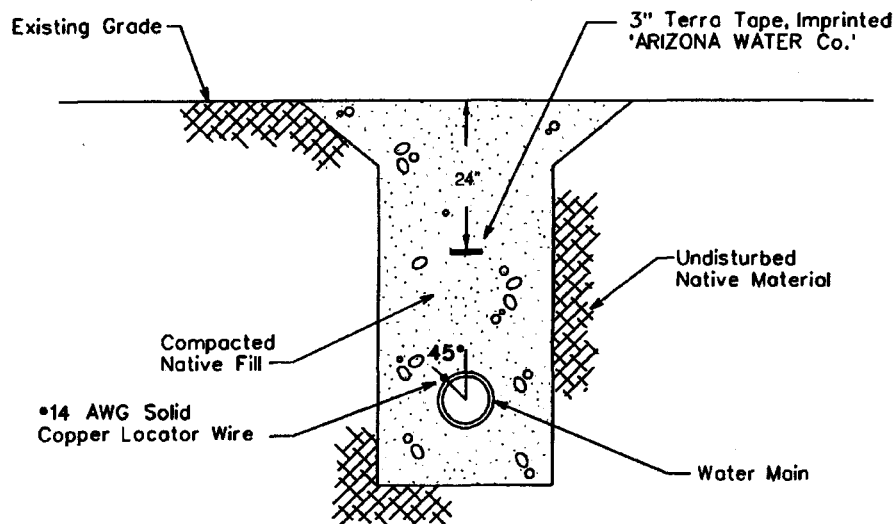
MJW

DATE

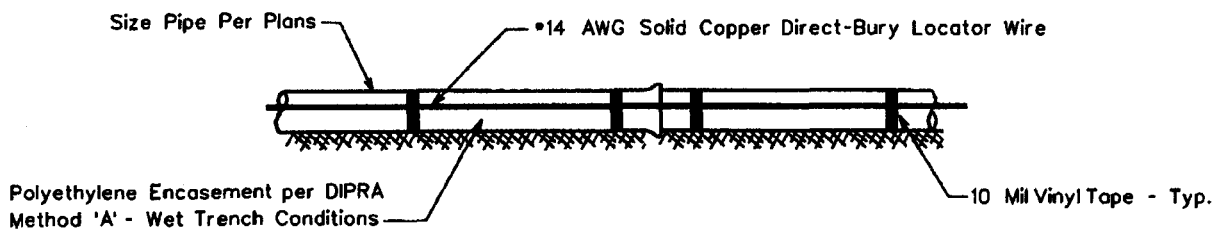
7-12-96

△

E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

1. All pipe shall have #14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
2. The Locating Wire Shall Terminate At The Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

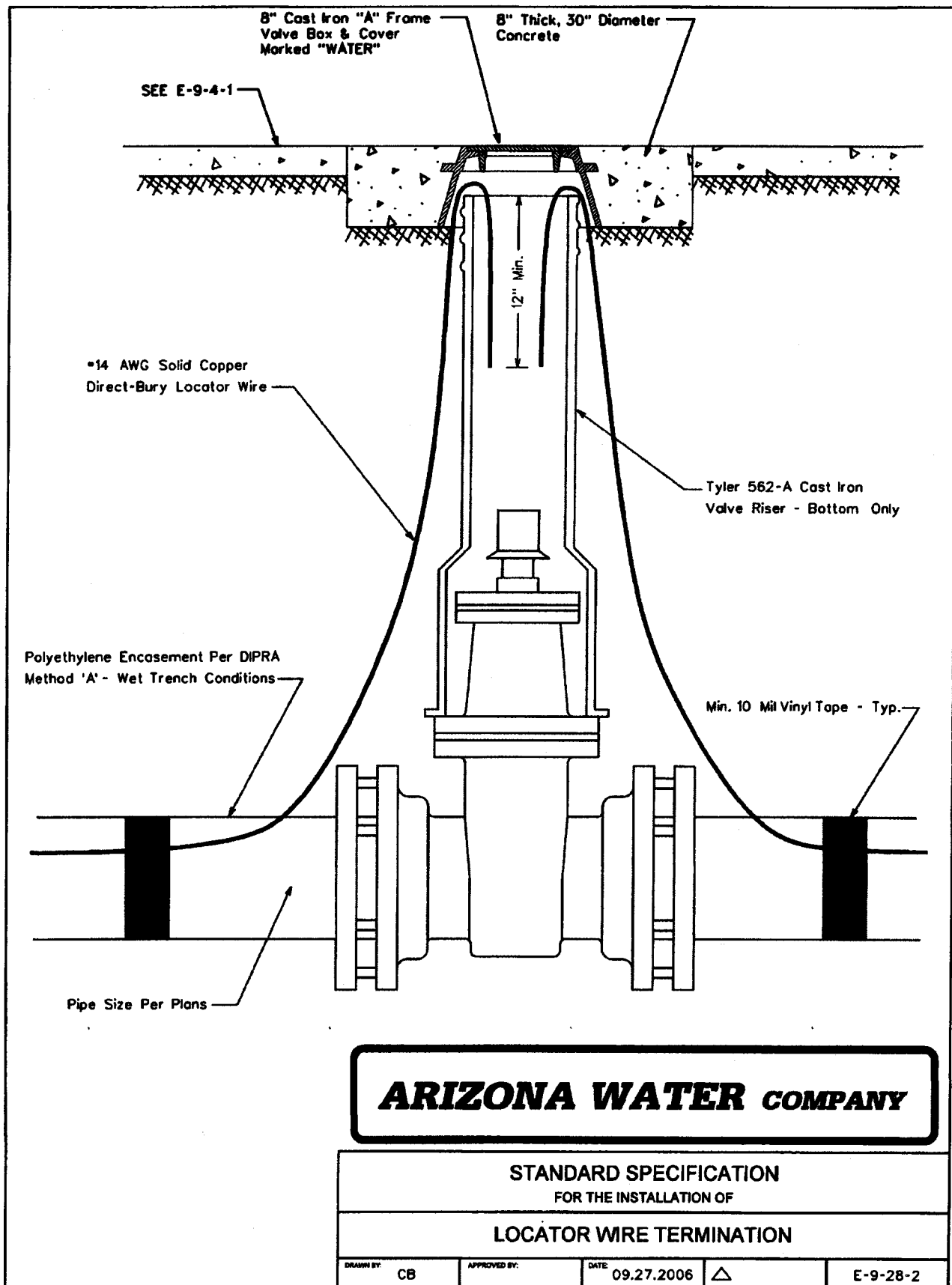
1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.
 - A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
 - B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
 - C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

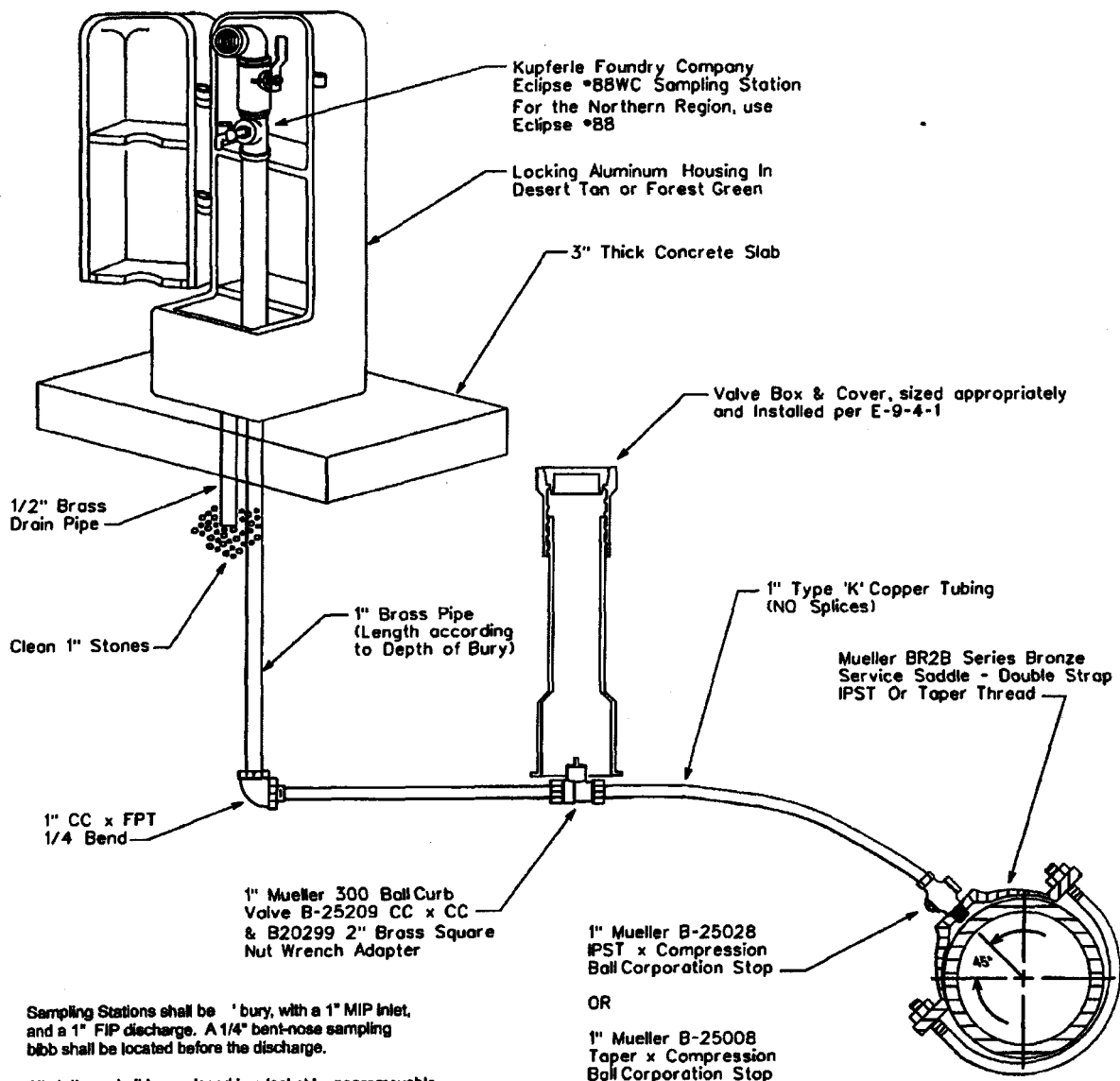
ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

PIPE WARNING TAPE AND LOCATOR WIRE

DRAWN BY: CB	APPROVED BY:	DATE: 03.24.1997	△ 09.27.2006	E-9-28-1
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Sampling Stations shall be 'bury, with a 1" MIP inlet, and a 1" FIP discharge. A 1/4" bent-nose sampling bibb shall be located before the discharge.

All stations shall be enclosed in a lockable, nonremovable, aluminum-cast housing.

When opened, the station shall require no key for operation, and the water will flow in an all brass waterway.

All working parts will be of brass and serviceable from above ground with no digging. (OPTIONAL: If desired, a 1/2" brass drain tube will be provided within the locking cover).

A 1" ball valve will control the water flow, and be located before (or after) the sampling bibb, as manufactured by Kupferle Foundry, St. Louis, MO 63102.

SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

Pipe Depth Per
E-8-1-2, Item 3.

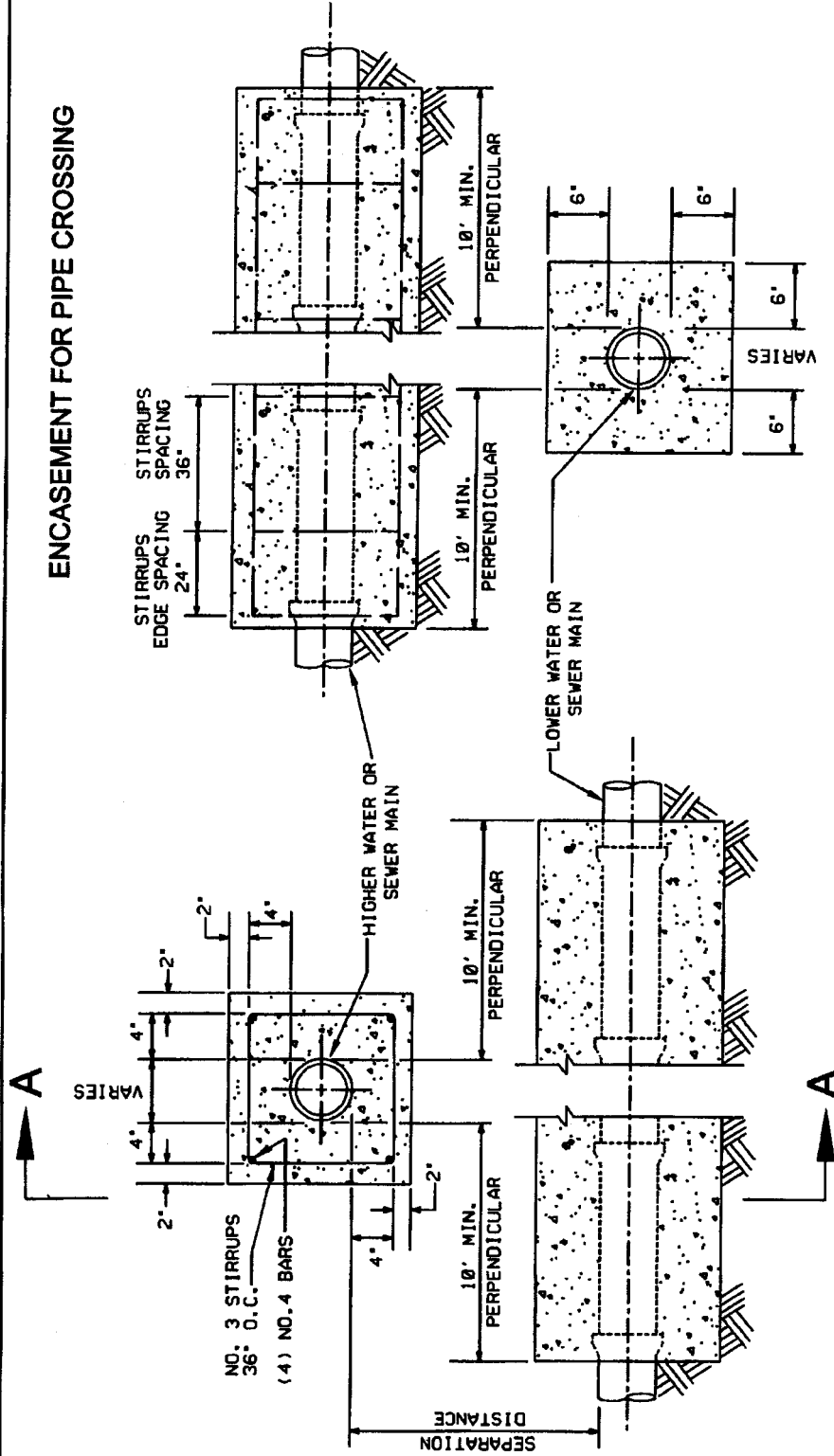
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SAMPLING STATION

DRAWN BY: CB	APPROVED BY: MW	DATE: 01.24.2007	△	E-9-29-1
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ENCASEMENT FOR PIPE CROSSING



SECTION A-A

NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.

ARIZONA WATER COMPANY

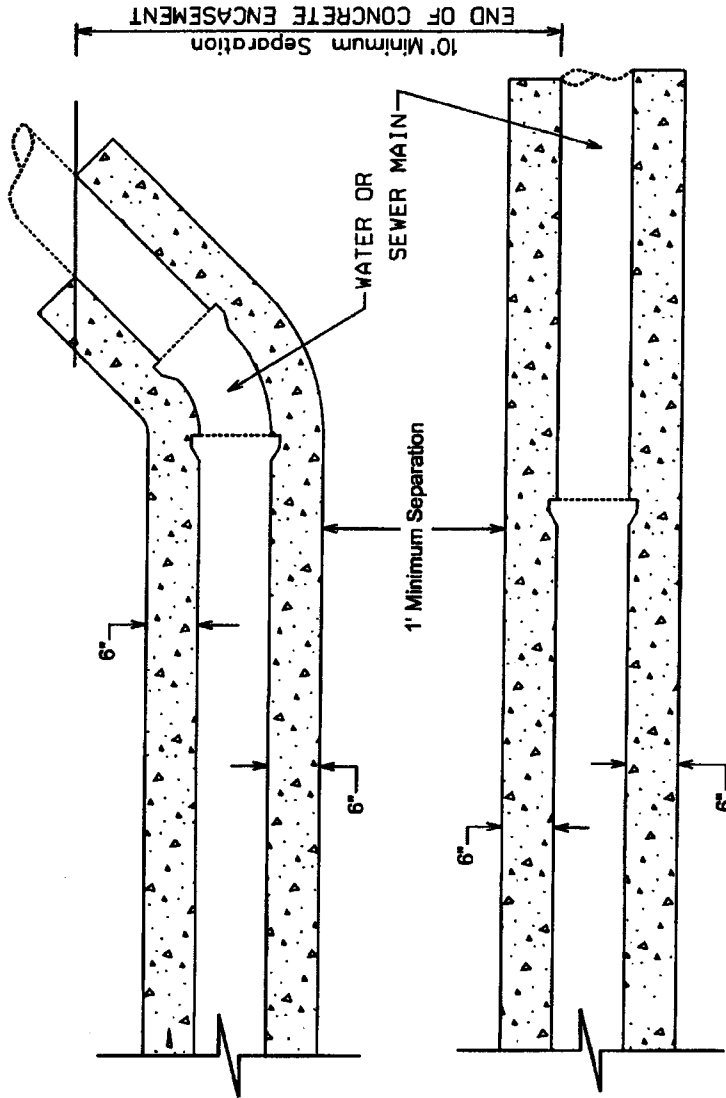
STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WATER AND SANITARY SEWER
SEPARATION/PROTECTION

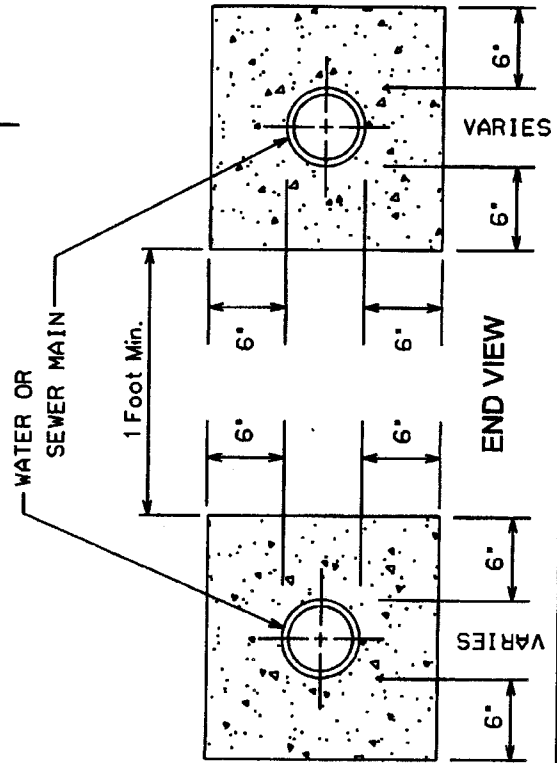
DESIGNED BY: CB	APPROVED BY: JW	DATE: 04.07.2008	REVISION: Δ	E-9-30-1
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NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.



PLAN VIEW



ENCASUREMENT FOR PARALLEL PIPES

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

**WATER AND SANITARY SEWER
SEPARATION/PROTECTION**

DESIGNED BY: CB	APPROVED BY: JW	DATE: 04.07.2008	△	E-9-30-2
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ENGINEERING SERVICES

Configuration, RTU Application Software (Globe Miami): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Globe Miami): \$8,850

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Lakeside): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Lakeside): \$4,065

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Heber): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Heber): \$4,665

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Superior): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Superior): \$2,900

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Sedona): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Sedona): \$6,275

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Bisbee): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Bisbee): \$4,665

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Casa Grande): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

0001	V118	ADD: 4 AO MODULE	\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-16DI/FET	16 DI/DO FET I/O Interface Kit (16DI)	\$ 255.00	\$ 255.00
0001	GD3572-16DO	16 DO I/O Interface Kit	\$ 650.00	\$ 650.00
0001	GD3572-4AO	4 AO I/O Interface Kit	\$ 255.00	\$ 255.00

Sedona: \$ 22,890.00

Note: Rancho Rojo Well, Sedona Golf Course Resort Tank, Sedona Golf Course Resort Well were previously quoted under a different project

QTY	Part No	Description	Unit Price	Extended
0010	GD5188	Lo Power Replacement Radio Kits (Southwest Center Well #8, Rainbow Well #6, Williams Well #7, Harmony High Park Tank, Valley Vista #13, Rimrock Well #2, Montezuma Haven Well #3, Montezuma Hills Tank, Rim Well #1, Harmony Well)	\$ 450.00	\$ 4,500.00
0010	FRN5907	DPSK BOARD (Southwest Center Well #8, Rainbow Well #6, Williams Well #7, Harmony High Park Tank, Valley Vista #13, Rimrock Well #2, Montezuma Haven Well #3, Montezuma Hills Tank, Rim Well #1, Harmony Well)	\$ 180.00	\$ 1,800.00
0001	GD2421	Electrical Install	\$ 5,655.00	\$ 5,655.00

0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Office)	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V224	ADD: HOUSING TAMPER SWITCH	\$ 40.00	\$ 40.00
0001	V480	ADD: 16 DO / DI FET	\$ 250.00	\$ 250.00
0001	V118	ADD: 4 AO MODULE	\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-16DI/FET	16 DI/DO FET I/O Interface Kit (16DI)	\$ 255.00	\$ 255.00
0001	GD3572-4AO	4 AO I/O Interface Kit	\$ 255.00	\$ 255.00

0002	F7563	ACE3600 WITH CDM750 136-174 MHZ (Wickiup Mesa Tank, Pinewood Tank)	\$ 1,850.00	\$ 3,700.00
0002	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 140.00
0002	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 600.00
0002	V245	ADD: 16DI 4DO EE 4AI +/-20MA	\$ 430.00	\$ 860.00

0002	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 620.00
0002	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 280.00
0002	GD3572-Mixed	Mixed I/O Interface Kit	\$ 385.00	\$ 770.00

Bisbee: \$ 15,341.00

QTY	Part No	Description	Unit Price	Extended
0009	GD4378	Hi Power Replacement Radio Kits (Tintown, Greaves Well, Stuart Pump Station, Fuller, Village Meadows, Sulger, Tombstone Canyon Tank, Spring Canyon Tank, Bisbee Office)	\$ 733.00	\$ 6,597.00
0003	GD6266	Radio Reprogramming (Tintown Booster, Naco, Tintown Tank)	\$ 95.00	\$ 285.00
0012	FRN5708	DPSK BOARD (Tintown, Greeves Well, Stuart Pump Station, Fuller, Village Meadows, Sulger, Tombstone Canyon Tank, Tintown Booster, Naco Tintown Tank, Spring Canyon Tank, Bisbee Office FIU)	\$ 207.00	\$ 2,484.00
0001	GD2421	Electrical Install	\$ 2,625.00	\$ 2,625.00
0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Naco MDLC (Formerly Intrac))	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V508	ADD: 8 DO EE RELAY 2A	\$ 260.00	\$ 260.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-8DO	8 DO I/O Interface Kit	\$ 420.00	\$ 420.00

Casa Grande: \$ 24,705.00

QTY	Part No	Description	Unit Price	Extended
0005	GD5188	Lo Power Replacement Radio Kits (Casa Grande Tank, North Park Tank, Pinal Booster Pump Site, Well 27, Well 29)	\$ 450.00	\$ 2,250.00
0003	GD6266	Radio Reprogramming (Stanfield Tank, Table Top, Tierra Grande Tank (spare))	\$ 95.00	\$ 285.00
0007	FRN5907	DPSK BOARD (Casa Grande Tank, North Park Tank, Pinal Booster Pump Site, Stanfield Tank, Table Top, Well 27, Well 29)	\$ 180.00	\$ 1,260.00
0001	GD2421	Electrical Install	\$ 6,650.00	\$ 6,650.00
0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Scott Drive Booster Station)	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V245	ADD: 16DI 4DO EE 4AI +/-20MA	\$ 430.00	\$ 430.00

TERMS

1. **Validity of quotation:** This quotation is valid for 30 days, and is based on the information provided to us at the time of quotation. We are not responsible for incorrect or missing information. New information provided to us after the quotation is generated may result in a revised quotation containing additional products or services required.
2. **Delivery date:** Delivery dates are not guaranteed. Orders are generally delivered in the most expeditious manner possible. A planned delivery schedule will be provided upon order placement. Change orders placed subsequent to the original PO may delay delivery.
3. **Order placement:** We reserve the right to reject orders that do not contain all quoted products and services except those items indicated in the optional products and services section. For radio programming, please provide radio frequencies at the time of order placement.
4. **Invoicing:** Orders are invoiced only when they are ready for delivery. The only exception to this policy is when the customer requests early billing.
5. **Payment:** 100% payment is due within 30 days of the invoice date. Invoices not paid within 30 days are subject to interest at the rate of 1.5% monthly, and your placement on COD basis for future orders. Early pay discount is not available.
6. **Payment method:** We accept payment by bank transfer (ACH), Check, and Cards (Visa and MasterCard only). Card payments must be processed on the same date that the invoice is generated. Payments made after the invoice date can be made only via ACH or Check.
7. **New Customers:** Credit application and references required for all new customers. Alternatively, you may pay by one of the payment methods above on the date of order delivery.
8. **Shipment FOB:** Global Data Specialists, 1815 W 1st Ave, Suite 110, Mesa, AZ. For Dataradio drop-shipped orders shipment FOB is CalAmp, Waseca, MN.
9. **Shipping charges:** If the quotation includes shipping, handling or delivery fees, it is only an estimate. Actual shipping charges will be determined only at the time of order shipment.
10. **Taxes:** Applicable sales taxes will be added to all orders unless a valid tax exemption certificate is presented at the time of order placement.
11. **Warranty** is specific to the policies of each respective OEM (Original Equipment Manufacturer). No additional warranties are expressed or implied. Please contact us for all warranty and non-warranty repairs with the exception of Dataradio. For Dataradio warranty and non-warranty repairs, call 800-992-7774 x6707. Warranty service includes standard depot repair only, and does not include shipping charges or service calls to remove, repair or reinstall equipment. Emergency repair and swap service costs extra and is subject to parts availability. Warranty labor includes direct in-house labor costs only. If warranty service requires our personnel to travel out of our office, additional time and materials charges will be invoiced separately.
12. **Order cancellation:** The following order cancellation charges shall apply:
 - Prior to 30 days of planned delivery date: 25% of the quoted amount shall be invoiced.
 - Less than 30 days of planned delivery date: 50% of the quoted amount shall be invoiced.
 - After order is ready for delivery: 100% of the quoted amount shall be invoiced.
13. **Contractors:** At our discretion, we will file a pre-lien when required. Please provide full project name and number, project location, and General Contractor and owner information at the time of order placement.
14. **Delinquent pick up:** You will be notified when the order is ready for pick up. Orders not picked up within 7 days of notification date are subject to storage fees of \$25 per unit per day.

1815 W. First Ave., Suite 110, Mesa, AZ 85202
Phone: 480-461-3401 FAX: 480-461-3411

QUOTE: MDM04063C
by Duane Moody
480-461-3401, Ext. 223, duane@gbl-data.com
Expires 26-Dec-11

September 27, 2011

Quoted To: Mike Loggins, James Wilson, Andy Haas

Arizona Water
3805 N. Black Canyon Hwy.
Phoenix, AZ 85015
Phone: 602-240-6860
FAX: 602-240-6878

End User: Arizona Water System, Narrow Band Upgrade

Description

Global Data Specialists is pleased to provide you with the following Budgetary quotation for the Narrow Banding Upgrade for your Motorola SCADA system.

The quote includes any installation/electrical charges associated with installing any new ACE3600 RTU's and the removal of old equipment.

Engineering services are also included for the reprogramming of the RTU's as needed.

Electrical Installation Scope of Work

- A. Furnish control technician to de-terminate all associated field wiring to existing Motorola RTU.
- B. Vacuum and wipe down cabinet (where applicable) for new RTU.
- C. Install new Motorola RTU, provided by Global Data Specialists.
- D. Reconnect existing wiring to new RTU and label.
- E. Test signals back to new RTU and verify functionality.
- F. Scope is typical for multiple locations.

1. Permitting, Construction, and Demolition

- a. All work performed will conform to NEC requirements and requirements of the Authorities having Jurisdiction to assure a code compliant facility.
- b. Demolish and dispose of existing equipment and materials in accordance with approved drawings.
- c. Furnish trash containers and sanitary facilities so as to provide a clean and sanitary work site.
- d. Provide grounding, lighting, power distribution, and instrumentation construction services in accordance with approved plans and specifications.

2. Exclusions and Clarifications

- a. Proposal is based on re-using existing wiring and devices.
- b. Delays or additional work that are found as a result of existing field conditions, may require a change order.
- c. Only work, equipment, and materials explicitly stated in this document are part of this proposal. Electrician accepts the responsibility for the coordination and furnishing of small and incidental equipment and services normally associated with this type of work and for coordination with other disciplines. Any additional significant equipment, materials, or services will be furnished only upon execution of a change order.
- d. All other equipment and services not specifically mentioned in this scope of work nor defined above shall be the responsibility of others.
- e. This proposal is based upon electrician executing their work in reasonable coordination with other disciplines and entities. Additional electrician costs due to significant or extraordinary delays by others will be grounds for change orders.

3. Taxes and Freight

- a. Taxes are not included in this proposal. Upon request, electrician will furnish an estimate of taxes for this work. Owner to furnish electrician with tax exempt information.
- b. Unless noted differently, this proposal includes freight cost for delivery of electrician manufactured products to the project site.
- c. Unless noted differently, freight cost for equipment shipped FOB manufacturer's facility or FOB port-of-entry is not included in this proposal.

4. Warranty:

- a. The warranty period for electrician manufactured electrical and control equipment is 18 months from ship date or 12 months from startup date. During this period, electrician will repair or replace at no cost to owner any failed component or system.
- b. Unless noted differently, electrician will honor a manufacturer's warranty for all purchased equipment and will coordinate with the manufacturer to repair or replace the equipment in accordance with the manufacturer's warranty.
- c. The electrician warranty covers only electrician furnished equipment and explicitly excludes all costs of lost production, loss of facility availability, and any and all other incidental costs.
- d. Electrician will make every effort to honor the warranty in a timely manner. Delays in getting parts or equipment from manufacturers may affect the time to implement repairs or replacement.

If you have any questions or need additional information please let me know.

Also please note that tax and shipping has not been included in this proposal.

Best Regards,

Duane Moody
Sales Manager

ENGINEERING SERVICES

Configuration, FIU and RTU Applications

The System Engineer will configure the FIU and RTU applications according to the system requirements.

Integration, On-site at Customer Location

- Test communications and operation between OIT and RTU
- Test and Debug as needed
- Conduct operator training on OIT
- Obtain signoff and acceptance

Engineering Services Sub-Total \$ 6,525.00

MATERIALS

Office FIU: \$ 6,489.00

QTY	Part No	Description	Unit Price	Extended
0001	F7500	ACE3600 SYSTEM TOOL SUITE		
			\$ 500.00	\$ 500.00

ACE3600 software tools environment for system building and maintenance. Includes installation CD and RS-232 PC to RTU cable.

0001	GD5677-ACE	ACE3600 RTU/FIU Application Program		
			\$ 2,600.00	\$ 2,600.00
0001	F7509	ACE3600 BASIC MODEL NO RADIO		
			\$ 1,150.00	\$ 1,150.00
0001	V102	ADD: 2 I/O SLOTS FRAME		
			\$ 50.00	\$ 50.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING		
			\$ 300.00	\$ 300.00
0001	V118	ADD: 4 AO MODULE		
			\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER		
			\$ 310.00	\$ 310.00
0001	V328	ADD: 10 AH BACKUP BATTERY		
			\$ 207.00	\$ 207.00
0001	FRN5769	SHARED RADIO INTERFACE		
			\$ 622.00	\$ 622.00
0001	GD3572-4AO	4 AO I/O Interface Kit		
			\$ 255.00	\$ 255.00

Valley Vista System RTU's: \$ 14,428.00

QTY	Part No	Description	Unit Price	Extended
0004	F7563	ACE3600 WITH CDM750 136-174 MHZ		
			\$ 1,850.00	\$ 7,400.00

The model default includes CDM750 136-174 MHz radio, radio installation kit, PS 12V DC, CPU3640, basic frame (no I/O slots) and plug-in radio port for CPU. Must be ordered with Metal chassis or housing option. CDM750 is only shipped to North America at this time

0004	V102	ADD: 2 I/O SLOTS FRAME		
			\$ 50.00	\$ 200.00
0004	V228	ADD: 50X50 CM PAINTED METAL HOUSING		
			\$ 300.00	\$ 1,200.00
0004	V245	ADD: 16DI 4DO EE 4AI +/-20MA		

0004	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 430.00	\$ 1,720.00
0004	V328	ADD: 10 AH BACKUP BATTERY	\$ 310.00	\$ 1,240.00
0004	FPN1653	ASSEMBLY, POWER SUPPLY, 24V PS PLUG IN KIT	\$ 207.00	\$ 828.00
0004	GD3572-Mixed	Mixed I/O Interface Kit	\$ 75.00	\$ 300.00
			\$ 385.00	\$ 1,540.00

OIT Option: \$ 1,550.00

QTY	Part No	Description	Unit Price	Extended
0001	GD5370	Operator Interface Terminal: 5.6 inch Graphic HMI with High-Resolution Analog Touchscreen Color TFT Display. Includes 120VAC to 24 VDC power supply (159mmLx 97mmW x 38mmH), Software, 5ft OIT to PLC communications cable, and 5 pack of protective touch screens. Includes mounting hardware.	\$ 1,550.00	\$ 1,550.00

NOTE: Does not include installation of OIT or power supply, AC power cable/wiring, or power supply to OIT cable/wiring.

Shipping: \$ 325.00

QTY	Part No	Description	Unit Price	Extended
0001	GD7336	Federal Express Ground	\$ 325.00	\$ 325.00

Materials Sub-Total \$ 22,792.00

OTALS

Engineering Services	\$ 6,525.00
Materials	\$ 22,792.00
TOTAL	\$ 29,317.00

OPTIONAL SERVICES (Not Included in Quote Totals)

Programming and On-Site Integration of OIT \$ 5,760.00

The System Engineer will create the OIT Application Program for the levels and pump set point adjustment of the tank site.

On-Site Integration Includes

- Test communications and operation between OIT and RTU
- Test and Debug as needed
- Conduct operator training on OIT
- Obtain signoff and acceptance

Radio Path Survey \$ 4,365.00

To conduct a radio path survey at all of the RTU sites in the Sedona system to evaluate and determine radio power requirements and optimal path considerations.

OPTIONAL MATERIALS (Not Included in Quote Totals)

QTY	Part No	Description	Unit Price	Extended
0001	Y1503	Antenna, Gold Anodized Directional Yagi 3 Element 7.1 dB Gain VHF50-174 MHz)	\$ 183.00	\$ 183.00
0001	RG213	RG213 (Cost Per Foot)	\$ 1.15	\$ 1.15
0001	FSJ4-50B	1/2" Superflex (Cost Per Foot)	\$ 3.58	\$ 3.58
0001	GD1555-1	N-Male Connectors (ea) (1/2" Superflex)	\$ 25.00	\$ 25.00
0001	GD1555-2	N-Male Connectors (ea) (RG213)	\$ 6.00	\$ 6.00
0001	GDISB50LN-C2	Polyphaser (N-Male to N-Male) with 2ft Pigtail	\$ 145.00	\$ 145.00
0001	FG1683	Antenna, Fiberglass Omnidirectional 3 dB Gain VHF	\$ 185.00	\$ 185.00
0001	FM2	Mounting Bracket, Heavy Duty for Omni Fiberglass Base Antenna	\$ 30.00	\$ 30.00

Optional Wall Mount Housing for OIT and RTU (Includes mounting of OIT and RTU within enclosure.: \$ 4,642.00

QTY	Part No	Description	Unit Price	Extended
0001	GD3612	Lamax SST Housing (36x24x12), NEMA 4 Wall Mount (Painted Steel) with cutout for OIT. Includes installation and cabling of ACE3600 and OIT as well as installation of the I/O interface kit. AC wiring to the OIT power supply is not included.	\$ 4,242.00	\$ 4,242.00

If this option is purchase, (1) V228 50x50cm housing can be deducted from the ACE3600 configuration. A V056 option
ADD: 48 X 48 CM METAL CHASSIS, \$100) will need to be substituted for the V228 option.

0001	GD7336	Shipping	\$ 400.00	\$ 400.00
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TERMS

NOTE 1: Quote does not include shipping.

NOTE 2: Quote does not include taxes.

Payment:..... 100% Upon Receipt of Invoice, Net 30 Days. 1% discount if payment is received Net 15. We also accept Visa, Master Card, and American Express.

Delivery:..... TBD Upon Order Placement

Validity: Quotation is valid for 90 days. The above quotation is based upon the information provided at the time of quotation. Global Data Specialists is not responsible for any information that is missing or incorrect. Any new information that is received after the quotation has been submitted may result in a revised quotation being issued to cover the costs of additional equipment or services as identified.

Shipment:..... Global Data Specialists, Mesa, AZ.

Warranty: The Motorola equipment is warranted for 1 year upon shipment for parts and labor. Non-Motorola equipment warranties are vendor specific and will apply. No additional warranties are expressed or implied. Warranty labor does not include the cost associated with any out of the office related travel or hourly time expenses and will be billed separately.

Cancellation:..... 10% Penalty prior to 30 days of shipment, 25% Penalty less than 30 days prior to shipment.

Note: Please reference quotation number on all correspondence.



1815 W. First Ave., Suite 110, Mesa, AZ 85202
Phone: 480-461-3401 FAX: 480-461-3411

QUOTE: **MDM03931C**
 by Duane Moody
 480-461-3401, Ext. 223, duane@gbl-data.com
 Expires 07-Sep-11

June 09, 2011

Quoted To: **Andy Haas**
 Email: ahaas@azwater.com

Arizona Water
3805 N. Black Canyon Hwy.
Phoenix, AZ 85015
Phone: 602-240-6860
FAX: 602-240-6878

End User: **Valley Vista System**

Description

Global Data Specialists is pleased to provide you with the following BUDGETARY quotation for the Sedona system as per your request. The quote includes as follows:

Replacing the RTUs communicating Intrac protocol at the Sedona Golf Course Resort Tank and 3 associated wells (Rancho Rojo, Sedona Golf Resort Well, and Valley Vista Well) with the Motorola ACE3600. This would also include another FIU at the office with analog output module for interface to a strip chart recorder (currently interfaced to Intrac FIU). The ACE3600 FIU would share the same radio as the current Intrac FIU.

An option for an Operator Interface Terminal (OIT) would be interfaced to the Tank as an option and would include the following:

- a. OIT with software
- b. 120VAC to 24VDC power supply needed for the OIT (159mmLx97mmWx38mmH)
- c. A 5ft comm. cable from the OIT to the PLC
- d. A 5 pack of protective screen covers for the touchscreen
- e. The Engineering Services for programming of the OIT and RTU

NOTE: This Option can also be included with Option 3 below.

This will not include installation of the OIT in the housing/cabinet or AC to power supply or power supply to OIT wiring/cables. A separate housing for the OIT will need to be provided or a larger housing at the Tank may be needed to house the ACE3600 and OIT. A separate housing for installation of the OIT and RTU (wall mount) is included in the Optional Materials.

NOTE 1: The Optional Materials section of the quote lists a VHF Yagi antenna individual price for those sites that may need to be replaced as needed for optimal system operation. Also, please note that any sites requiring new coax cable will be included on the invoice. Coax cable types, with cost per foot, has been included in the Optional Materials section of the proposal. Optional connectors and other items are also included in this section.

NOTE 2: The Optional Services also includes the budgetary estimate for a radio path survey for the RTU sites at Wikiup, Pinewood, Harmony High Point, Sedona Golf Course Resort, and Montezuma Hills Tanks and associated wells/pump sites.. This will also include the central computer FIU. This will also determine the optimal location of the repeater as well as antenna height. The radio path survey is needed to evaluate and determine the radio communications path between the various sites to determine if a 5 watt VHF radio is sufficient or if a higher power radio configuration is required. If a higher power radio is needed, this will also determine if any hardware changes need to be made at the site(s) for larger power supply and larger radio.

NOTE 3: Quotation does not include RTU equipment installation.

To provide cost effective installation of the ACE3600 RTU, Global Data Specialists has created I/O interface kits that can be used for faster and easier installation of the equipment. The kit consists of DIN rail mounted terminal blocks and relay blocks, along with a direct interface connector to the front of the I/O module, and a 3 ft cable. Additional lengths are optional.

These kits have been designed for the Mixed I/O module, 8/16 AI module, 8/16 DO module, 16/32 DI module, 4 AO module, 4AO/8AI module, 16DI FET, 8 DI/8DO FET, 16DO FET, and the 16 DI 120-230V module. Additional modules can be designed upon request.

The kits can be mounted within a wall mount enclosure along with the ACE3600 RTU, or within a separate housing or for outside the enclosure mounting depending upon the site requirements.

In addition, these kits were created for the following issues.

- a. The maximum wire size for the terminals on the ACE3600 I/O modules is 18 ga.
- b. The relays in the DO and Mixed I/O modules do not have a high capacity compared to the MOSCAD RTU's or be able to drive external devices. As a result, interpose relays may need to be required. The interface kit includes relays that provide higher capacity relays than those included with the ACE I/O modules.
- c. The terminals provided with the interface kit allow for easier installation and up to 12ga wiring. The terminals, "linkles" on the I/O modules can be hard to access within the module housing and can be cramped for the wiring to the module. The interface kit terminals can be installed for more readily available access and easier wire routing.

NOTE: The add-on power supply for the DI and AI modules will be needed to provide wetting voltage for the DI's and the AI loop power.

If you have any questions or need additional information please let me know.

Best Regards,

Duane Moody
Sales Manager

WA 1-4929

ARIZONA WATER COMPANY WORK AUTHORIZATION

W.A. NUMBER: 1-4929
P.E. NUMBER:
BUDGET ITEM NO.: 1-4929
SHEET NO.: 1 of 2

SYSTEM: PINWOOD	WORK TO START BY: UPON AUTHORIZATION
DIVISION: VERDE VALLEY	WORK TO BE FINISHED BY: WITHIN 60 days
TAX CODE: 0192	

DESCRIPTION OF WORK:

Replace water services in Pinewood Units 7 & 8 on Hopi Place, Zuni Place, Navajo Place, Kay Place, Acoma Place and San Felipe Place complete as per Arizona Water Company construction specifications E-8-1. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

2012 Approved Budget Item (\$100,000)
Water loss in the Pinewood system exceeds 10% and has been around 30% over the past few years. After gathering leak records for the Pinewood system, Company engineers determined that a service line replacement program is needed. This project is the first phase of the service line replacement program in the Pinewood system.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY:	
MATERIAL	0	<i>Andrew J. Haas</i> Andy Haas AJH 4-5-12	4-4-12
LABOR	2,500	REVIEWED FOR ESMT/ROW VERIFICATION:	
CONTRACT PORTION	182,905	<i>Charles Briggs</i> CB 04-05-2012	04-04-2012
OVERHEAD	20,395	REVIEWED BY:	
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$ 205,800	<i>Mike Loggins</i> ML 04-5-12	4-4-12
FUNDS RECEIVED:		APPROVED BY ENGINEERING:	
CONTRIBUTIONS RECEIVED	0	<i>Frederick Schneider</i> FS 4-5-12	4-5-12
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE:	
TOTAL CONTRIBUTIONS/ADVANCES	0	<i>Joseph Harris</i>	4/5/12
NET CASH REQUIRED	\$ 205,800	AUTHORIZED BY PRESIDENT:	
		<i>William Garfield</i>	4-5-12

COMMENTS:

\$5,800 to be funded by WA 1-4928

The scope of work and budgeted funds from WA 1-4937 (\$100,000) are being combined with WA 1-4929 into a single project.

RELEASED TO CONSTRUCTION

Authorized by FRED SCHNEIDER
Date 4/5/2012

AFH

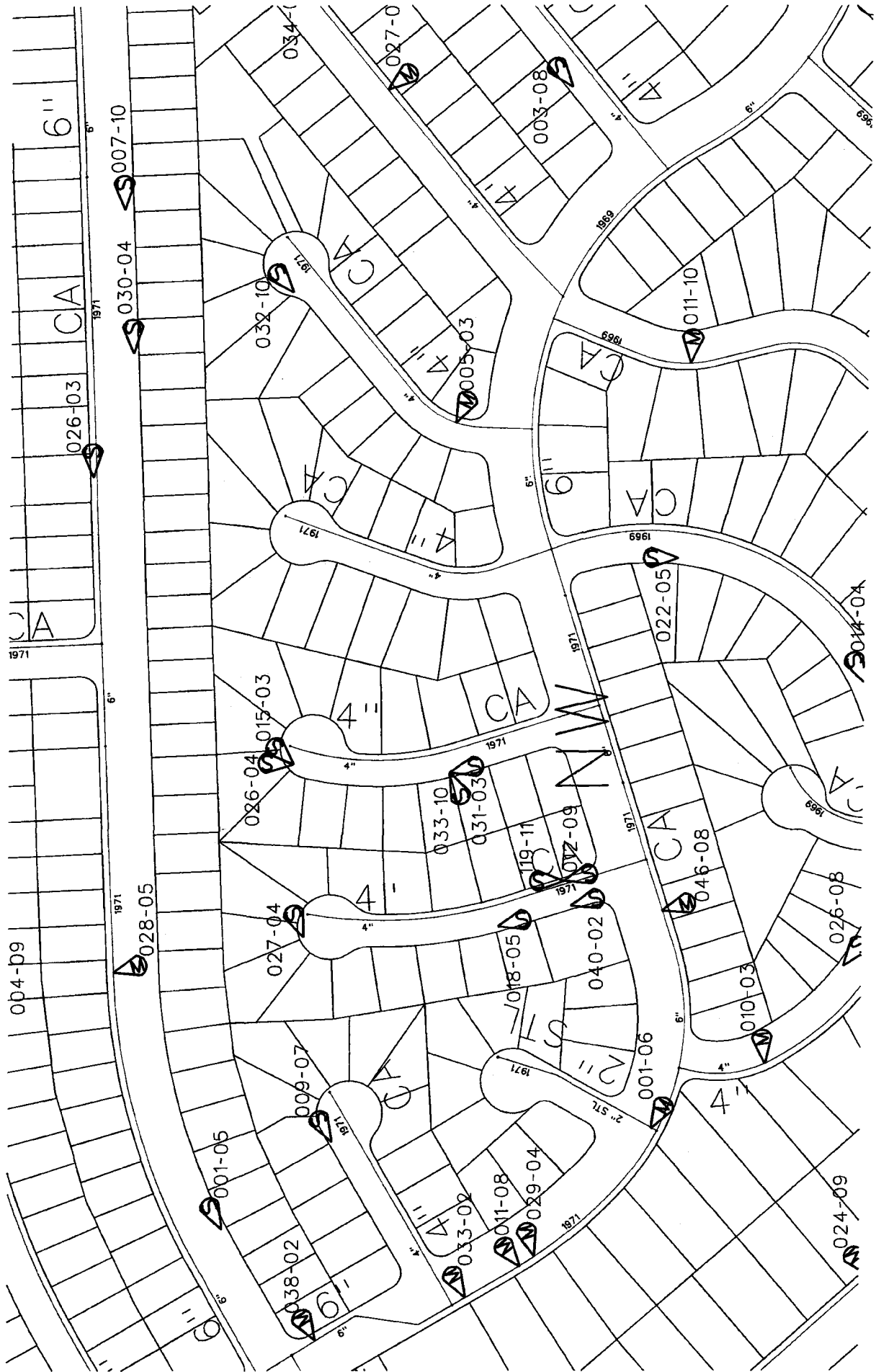
ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-4929
P.E. NUMBER:
BUDGET ITEM NO.: 1-4929
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS		PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	YEAR INSTALLED AND W.A. NUMBER
PROJECT DESCRIPTION					
Replace water services in Pinewood Units 7 & 8 on Hopi Place, Zuni Place, Navajo Place, Kay Place, Acoma Place and San Felipe Place complete as per Arizona Water Company construction specifications E-8-1.					
C O N T R A C T W O R K	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
	Contracting Tax	345	1	\$ 8,913.00	\$ 8,913
	100% Performance and Payment Bonds	345	1	2,592.00	2,592
SERVICE CONNECTIONS COMPLETE: DOUBLE-LONG	345	20	4,400.00	88,000	
SERVICE CONNECTIONS COMPLETE: DOUBLE-SHORT	345	16	3,000.00	48,000	
SERVICE CONNECTIONS COMPLETE: SINGLE-LONG	345	6	4,100.00	24,600	
SERVICE CONNECTIONS COMPLETE: SINGLE-SHORT	345	4	2,700.00	10,800	
TOTAL CONTRACT WORK					\$ 182,905
M A T E R I A L S					
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
SERVICE CONNECTIONS: SINGLE-SHORT	345				
METERS	346				
TOTAL MATERIALS					\$ -
L A B O R	Project Management	345	10	\$ 50.00	\$ 500
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	345	40	50.00	2,000
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345				
INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345				
TOTAL LABOR					\$ 2,500
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					\$ 185,405
OVERHEAD					20,385
TOTAL					\$ 205,800
REFUNDABLE PORTION <input type="checkbox"/>		NON-REFUNDABLE PORTION <input type="checkbox"/>		COST ESTIMATE	

AFH





NW 1/4 Sec. 15 - T. 18N, R. 7E

Dale D. Wegner, Jr.
P.E.,
County Engineer

Randy Ryan
Assistant County
Engineer

Galen C. Reed, Sr.
Bridgette Watson
Code Enforcement
Officers

Public Works Department

"An American Public Works Accredited Department"

Encroachment Permits

* Special Events * Utilities * Commercial * Residential
2500 N. Ft. Valley Rd.
Flagstaff, AZ 86001-1287
Phones (928) 226-2785 or 2786 FAX (928) 226-2718

WINTER CONDITIONS FOR EXCAVATION and CONSTRUCTION

Enforced November 1 through April 30

GENERAL CONDITIONS

- A. Only short-term stationary work allowed (daytime, 1-12 hours duration; defined in MUTCD, Part VI, 6G-2a.) No open trench conditions allowed overnight.
Traffic control devices shall be equipped with Type A (low intensity) or Type B (high intensity) flashing lights.
- B. No work allowed if soil is frozen or above optimum moisture.
- C. No work allowed within 24 hours of 50% or greater chance of impending storms as predicted by the National Weather Service.
- D. No work allowed within 72 hours after a storm in order to accommodate snow removal and cleanup operations.
- E. No work allowed when visibility or weather conditions are such that safety to workers or the public is compromised, as determined by the Code Enforcement Officer (public works inspector) or authorized agent of Coconino County.
- F. No construction material storage, parking of equipment or blocking of roadway allowed according to winter No Parking Ordinance 86-6.

PAVED ROADS

- No Cutting or trenching allowed
- Directional drilling may be allowed on a case by case basis; no potholing for utility location allowed.

UNIMPROVED ROADS

- Roadway cut: 2 sack CLSM backfill only



APR. 9. 2012 12:28PM

PUBLIC WORKS ANNEX PERMIT-SIMPLE (IN BACKSLOPE, NO. 865-EE.P. 2

**Coconino County
Public Works****WORK AUTHORIZATION**5600 East Commerce Flagstaff, AZ 86004
(928) 679-8850/(928) 679-8852 Fax (928) 679-8883
<http://www.coconino.az.gov>*Ray***Permit Information:**

APR - 9 2012

Permit #: PW-12-0013

Parcel 1

Permit Type: Utility Encroachment Permit-simple (in

Project Name: Work consists of replacement of water services from water main to water meter in various locations on Hopi Pl, Zuni Pl, Navajo Pl, Kay Pl, Acoma Pl, and San Felipe Pl in Pinewood/Munds Park Unit 7 and 8.

Project Description: Work consists of replacement of water services from water main to water meter in various locations on Hopi Pl, Zuni Pl, Navajo Pl, Kay Pl, Acoma Pl, and San Felipe Pl in Pinewood/Munds Park Unit 7 and 8.

Site Address:

Dependent Permits: None

Subdivision:

Contacts Associated with this Permit:

Type	Name	Phone #	Fax #	Email #
Applicant	Arizona Water Company Allan Fredricks	(928) 282-7092	(928) 286-1236	

Contractors:

Name	Contact	Phone #	Fax #	License #
Wise Corp		480-883-8897		076422

Permit Details:

Project Locations	San Felipe Pl.
:	Acoma Pl
:	Kay Pl
:	Navajo Pl
Site Address	Hopi Pl & Zuni Pl

Fee Information:

Encroachment Utility 200' OR LESS	200.00
Encroachment Processing Fee	200.00
Total Fees:	\$400.00

Minimum Inspections Required:

Public Works - Pre-Construction
Public Works - Construction Progress
Public Works - Encroachment Final
Public Works - Right-of-Way

Receipt#:**Inspection Contacts**

Robert Hernandez, Code Enforcement Officer (928) 679-8882

Additional Comments:**Conditions:** Please read conditions, initial next to them and provide copy to Encroachment Officer.

Initials

APR. 9. 2012 12:28PM

PUBLIC WORKS ANNEX

KM11-SIMPLE (IN BACKSLOPE, NO. 865-EBIP. 3



**Coconino County
Public Works**

WORK AUTHORIZATION

5600 East Commerce Flagstaff, AZ 86004
(928) 679-8850/(928) 679-8852 Fax (928) 679-8883
<http://www.coconino.az.gov>

Rm

Permit Information:

Permit #: **PW-12-0013**

Parcel :

APR - 9 2012

Conditions: Please read conditions, Initial next to them and provide copy to Encroachment Officer.

Initials

1. A. Any work requiring excavation under paved road shall be done as follows: Asphalt shall be saw cut, excavation will be backfilled with 2-sack slurry (1-sack may be used upon request). Asphalt shall be patched using hot mix and t-topped. Contractor may patch road at a later date but will contact Robert Hernandez with proposed schedule. Any work done in the foreslope or backslope of ditch is to be backfilled with native material and compacted to as close to original condition as possible. Routine system maintenance, point repairs and service connections are included. New construction or extensions require individual permits and additional conditions at the discretion of the County Engineer or his/her authorized representative. Contact Robert Hernandez (928) 606-4132 should work under foreslope or pavement be required.

JLS

B. Site plan or or construction diagram is required for each location. Specific conditions and details may be required for each installation.

C. DO NOT CLOSE ROADWAY WITHOUT AUTHORIZATION. KEEP SAFE ACCESS AT ALL TIMES.

D. RESTORE ROADWAY SHOULDER, SLOPES AND DRAINAGE CHANNELS TO ORIGINAL LINE AND GRADE

E. CLEAN UP AREA TO ORIGINAL OR BETTER CONDITION; HAUL AWAY SPOIL MATERIAL IMMEDIATELY

F. TA-6 MUTCD PART VI- MINIMUM REQUIRED TRAFFIC CONTROL IN R/W

2. Traffic Control shall be in accordance with the MANUAL on UNIFORM TRAFFIC CONTROL DEVICES-PART VI: Work Zones TA-6 "Shoulder Work.", immediate flagging as needed.

JLS

3. All construction within county rights of way shall comply with current permit conditions and for construction purposes, the following precedence of standards will prevail:
- 1) 2006 Coconino County Public Works Department Standards (including Engineering Design and Construction Criteria, Earthwork, Concrete, and Paving Standards).
 - 2) County approved project specific plans and specifications.
 - 3) Arizona Department of Transportation standards.
 - 4) Lastly, Maricopa Association of Government standards for issues not addressed by other standards.

JLS

All construction projects including (but not limited to) driveways, utility improvements, retaining walls, or any material such as asphalt and concrete must have inspections performed on these types of projects by a geotechnical or engineering firm.

All test results and final engineering reports must be submitted to Robert Hernandez at 928-606-4132.

Should you need a county inspector to perform a site visit, contact Robert Hernandez at the above phone number at least 24 hours in advance.

Once the required documentation has been reviewed and accepted by the county engineering department, then permits can be finalized.

Copies of current County Engineering standards are available at:
<http://www.coconino.az.gov/publicworks.aspx?id=593>

APR. 9. 2012 12:28PM

PUBLIC WORKS ANNEX

KMIT-SIMPLE (IN BACKSLOPE, NO. 865-EEIP. 4



**Coconino County
Public Works**

WORK AUTHORIZATION

5600 East Commerce Flagstaff, AZ 86004
(928) 679-8850/(928) 679-8852 Fax (928) 679-8883
<http://www.coconino.az.gov>

Rust

Permit Information:

APR - 9 2012

Permit #: **PW-12-0013**

Parcel :

Conditions: Please read conditions, initial next to them and provide copy to Encroachment Officer.

Initials

4. Winter conditions for excavation and construction in force November to April. Stay out of right of way for 72 hours after precipitation event or until Encroachment Officer indicates that the right of way is NOT to wet to work in. If snow is present in vicinity or above excavation area then no excavating is allowed until snow is cleared and soil is not too wet. JLS
5. In the event of any excavation, the licensee must notify Arizona Blue Stake at 1-800-782-5348 (1-800-STAKE IT) a minimum of 48 hours prior to excavating. All Arizona laws and regulations relating to excavation shall apply while working within county rights-of-way. JLS
6. The Licensee assumes the responsibility and all liability for any injury or damage to said highway in a lawful manner, caused by or arising out of the exercise of this permit or license. JLS
7. All work done shall be at the sole cost and expense of the Licensee, and shall be done at such time and in such manner as to be least inconvenient to the traveling public, and as directed by the agent of the Licensor. Work must be finished in the time specified on the permit. JLS
8. When the proposed work is completed, the Licensee shall repair the roadbed and replace the surfacing material thereon and will leave the said road in as good a condition as it is now, so far as the road is affected by the Licensee. JLS
9. If the subject of the permit or license fails to pass the final inspection, the Licensee will remove or replace the same within such time as specified by written notice from the Licensor; or if at any time hereafter, any material used by the Licensee in replacing or reconstructing any part of said highway proves defective, the Licensee will replace the same with the kind and quality of material which the Licensor shall specify. JLS
10. If the title and possession of any property placed upon the Right-of-Way by the Licensee remains in said Licensee, the Licensee shall and will promptly perform all necessary repair work upon written notice from the Licensor, and will not permit or allow any condition to exist which would be a hazard or source of danger to the traveling public. JLS
11. If at any time hereafter the Right-of-Way, or any portion thereof, occupied or used by the Licensee may be needed or required by the Licensor, any permit or license granted in pursuance of this application may be revoked by the Licensor and all right thereunder terminated, and upon sufficient notice, the Licensee shall and will remove all property belonging to the said Licensee. JLS
12. In the event that the work to be done under the authority of the permit or license necessitates the creation of any hazard or source of danger to any person or vehicle using said highway, said Licensee shall and will provide and maintain at all times during the existence of said hazard sufficient barriers, danger signals, lanterns and detours and shall and will take such other measures of precaution as the Licensor shall direct. JLS
13. If the work to be undertaken is of such a nature or character that the Licensor deems it necessary that said work be laid out or inspected by the Licensor, said Licensee will defray any and all expenses incurred by said Licensor and herein agrees to reimburse the Licensor, and for that purpose will deposit with the Licensor a sum of money in the amount necessary to cover all cost incurred by the Licensor. JLS

APR. 9. 2012 12:29PM

PUBLIC WORKS ANNEX

PERMIT-SIMPLE (IN BACKSLOPE, NO. 865-EEIP. 5



**Coconino County
Public Works**

WORK AUTHORIZATION

5600 East Commerce Flagstaff, AZ 86004
(928) 679-8850/(928) 679-8852 Fax (928) 679-8883
<http://www.coconino.az.gov>

[Signature]

Permit Information:

APR - 9 2012

Permit #: PW-12-0013

Parcel 1

Conditions: Please read conditions, initial next to them and provide copy to Encroachment Officer.

Initials

14. A Violation of any state, county or federal regulation, statute, code, standard, or policy at this location will constitute a violation of permit conditions and will be subject to STOP WORK ORDER, INSPECTION HOLD, CERTIFICATE OF OCCUPANCY HOLD, NO OCCUPANCY NOTICE, REVOCATION OF PERMIT, OR CEASE AND DESIST ORDER until such time as violation is corrected.

[Initials]

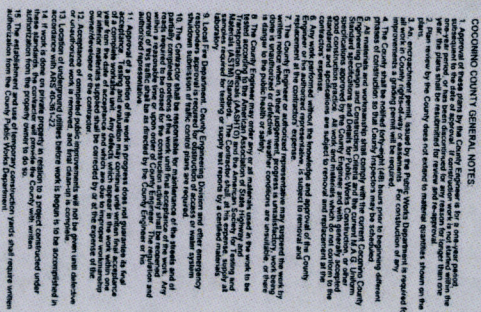
Issuance of a permit by Coconino County does not imply or signify that the proposed work complies with the requirements or is allowed by other County ordinances, regulations or requirements, or state or federal laws. Applicant agrees to accept sole responsibility and liability for compliance with all state, federal and local rules, requirements, laws, ordinance and regulations. By signing below, applicant attests to being either the owner or the authorized agent of the owner of the subject property. This is not a Building or Planning & Zoning Permit.

Print Name John L. Snickers Signature *[Signature]* Date 4-9-12.

Date Issued: APR - 9 2012 Issued By: *[Signature]* Date Expires: 10/03/2012

VICINITY MAP

REPLACE SERVICES ON HOPI PLACE, ZUNI PLACE,
NAVAJO PLACE, KAY PLACE, ACOMA PLACE, AND SAN FELIPE PLACE



DATE _____


The County approves these plans for concept only. All liability resulting from errors or omissions is the responsibility of the permittee and/or his consultants and employees. Concerning County does not verify or guarantee the measurements, calculations, ownership or conclusions indicated by the creation of these plans.

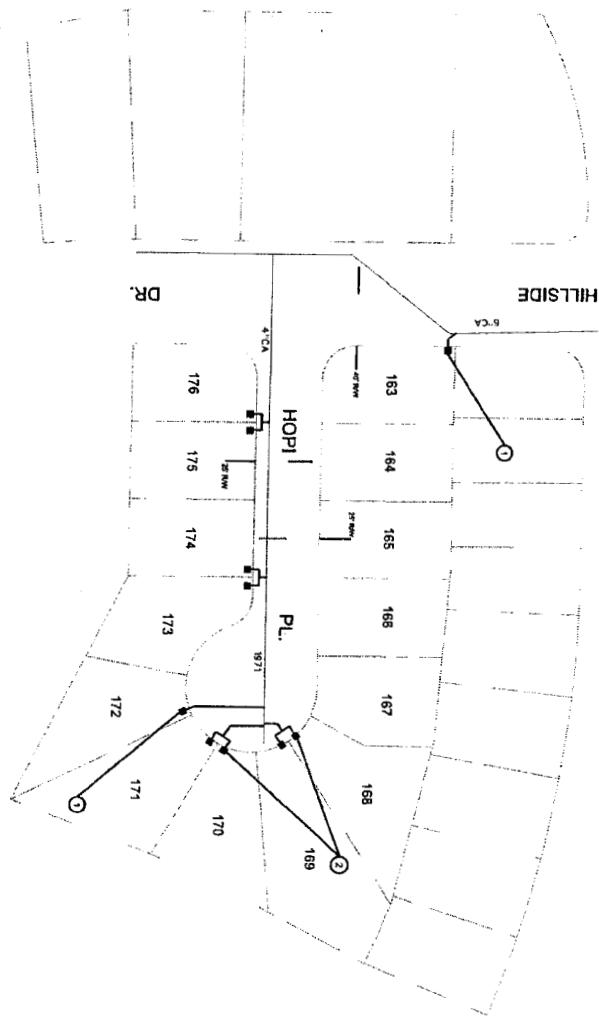
APPROVED BY: _____

APA
JUL 15 '13
JUL 15 '13

REPLACE SERVICES ON LINE


PROJECT SHEET DESC: OVERALL PROJECT

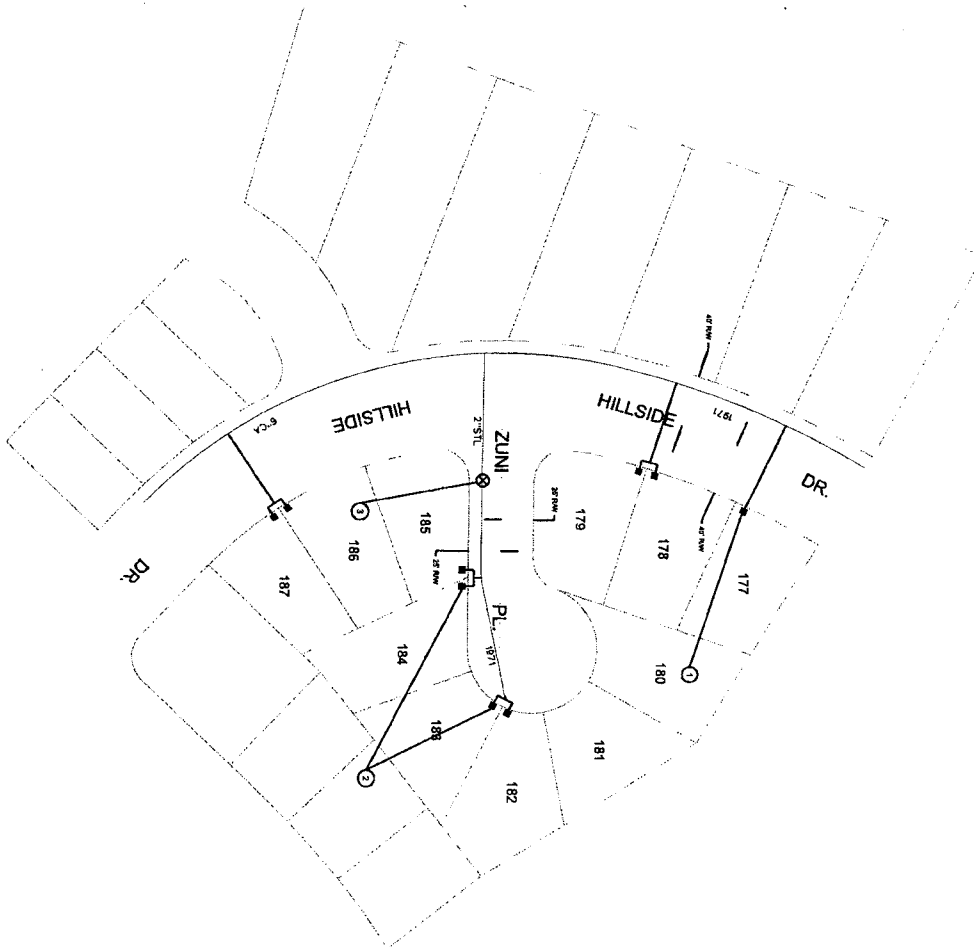
P.#	P.#	The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality
SYSTEM	VERDE VALLEY	
CITY, STATE	NW1/4 SEC 15 T.18N. R.7E.	
AS SHOWN	0192	
DATE:	9/8/2011	
SCALE:	AS SHOWN	
		 <p>THE ARIZONA WATER COMPANY 263-1100 1-800-STAKE-IT</p>



QUANTITIES LIST		
ITEM	DESCRIPTION	QTY
1	REPLACE SINGLE SERVICE	2 EA
2	REPLACE DOUBLE SERVICE	4 EA
	TOTAL	



	ARIZONA WATER COMPANY 3005 N. BLACK CANYON HWY. POST OFFICE BOX 23006 PHOENIX, ARIZONA 85018-0006 (602) 240-8855		VERDE VALLEY NINTUA SEC. 15 T. 19N. R. 7E 0182		The publication shown is to be installed in accordance with the Arizona Water Company standard specifications as set forth in the Arizona Department of Environmental Quality.
	PROJECT SHEET NO: REPLACE SERVICES ON HOP1 PLACE, 2 IN PLACES, NAVAJO PLACE, KAY PLACE, ACOMA PLACE, AND SAN FELIPE PLACE.		DATE: 8/7/2011 DRAWN BY: JS CHECKED BY: AH		
	PROJECT SHEET NO: REPLACE 4 DOUBLE SERVICES AND 2 SINGLE SERVICES ON HOP1 PLACE.		SCALE: 1"=50'-STAKE-IT 253-1100		
	SHEET 2 OF 9		VV-0006		



QUANTITIES LIST	
ITEM DESCRIPTION	QTY
1 REPLACE SINGLE SERVICE	1 EA
2 REPLACE DOUBLE SERVICE	4 EA
3 INSTALL 2" VALVE	1 EA

40
20
0
20
40
60



WV-0006
SHEET 3 OF 9



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY. POST OFFICE BOX 23008
PHOENIX, ARIZONA 85034-0008
(602) 240-6860

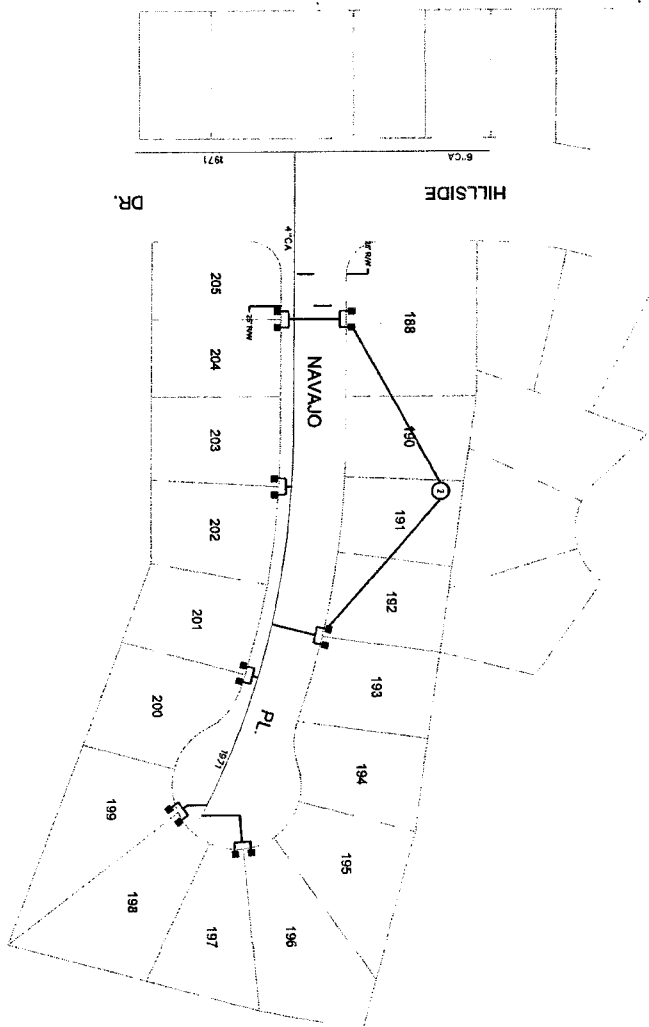
REPLACE SERVICES ON HORN PLACE, ZUNI PLACE,
NAVAJO PLACE, KAY PLACE, AGADAMA PLACE, AND SAN FELIPE PLACE.
REPLACE 4 DOUBLE SERVICES, 1 SINGLE SERVICE AND INSTALL ONE
2" VALVE ON ZUNI PLACE AND HILLSIDE DRIVE.


PROJECT	VERDE VALLEY
DATE	9/7/2011
BY	AS SHOWN
CHECKED BY	AM

The installation shown is to be installed
in accordance with the Arizona Water
Company standard specifications on file
with the Arizona Department of
Environmental Quality.

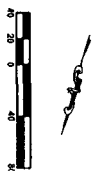
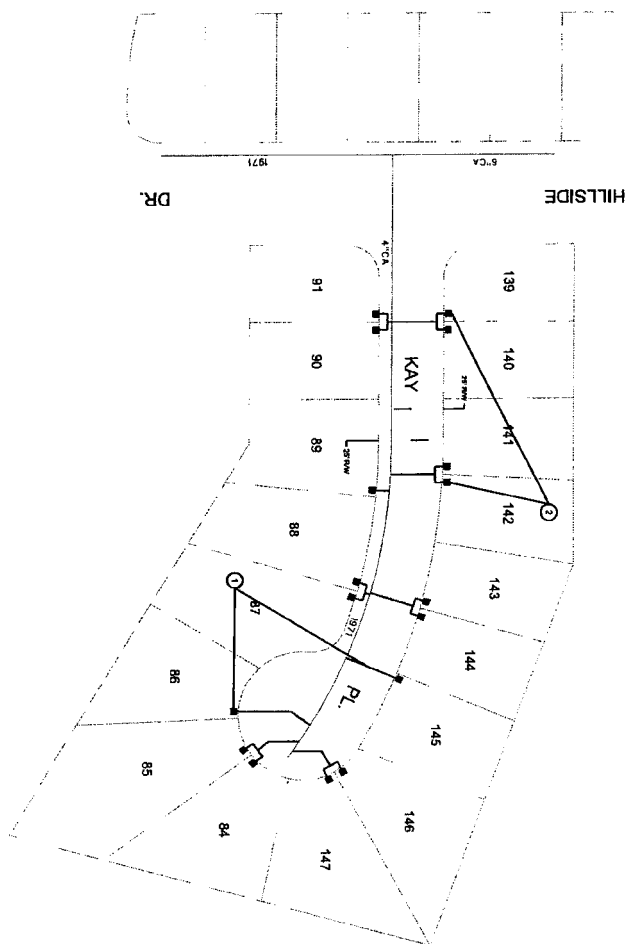
263-1100
1-800-STAKE-IT
© 2011 Arizona Water Company


QUANTITIES LIST		
ITEM	DESCRIPTION	QTY
1	REPLACE SINGLE SERVICE	10 EA
2	REPLACE DOUBLE SERVICE	7 EA
	TOTAL	

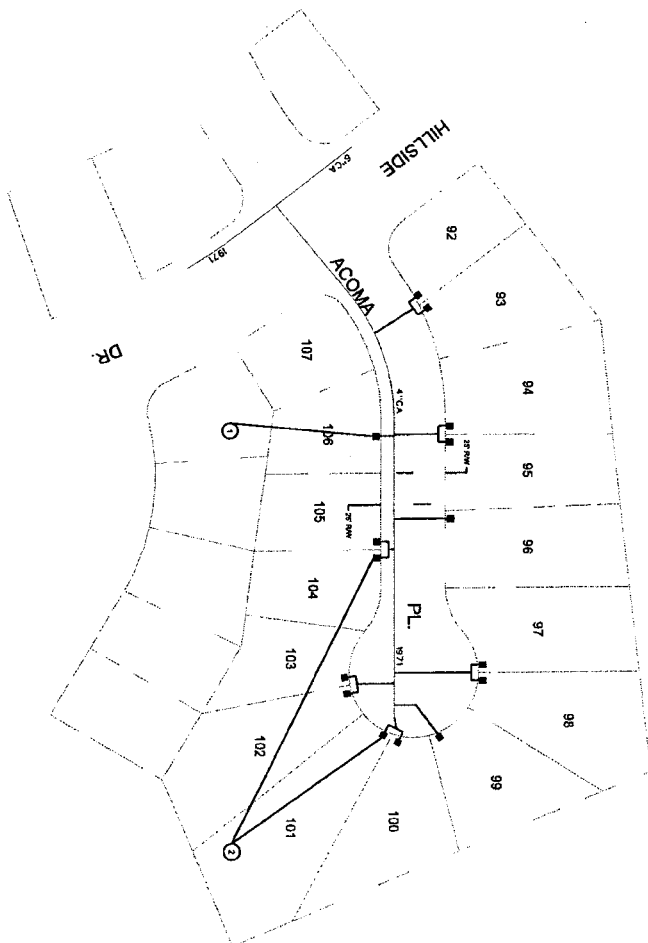


	ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY. POST OFFICE BOX 29006 PHOENIX, ARIZONA 85018-0906 (602) 240-6880		PROJECT NO. 0192 DATE 9/7/2011 SCALE AS SHOWN DRAWN BY JS CHECKED BY AH		The information shown is to be provided in accordance with the Arizona Water Company standard specifications as set with the Arizona Department of Environmental Quality.
	PROJECT NAME: REPLACE SERVICES ON WOLF PLACE, 20th PLACE, NAVAJO PLACE, 1st PLACE, AZONA PLACE AND SAN FELIX PLACE. PROJECT WELL ID: REPLACE 7 DOUBLE SERVICES ON NAVAJO PLACE.		PROJECT NO. 263-1100 1-800-STAKE-IT www.stake-it.com		

QUANTITIES LIST		
ITEM DESCRIPTION	QTY	
1. REPLACE SINGLE SERVICE	3 EA	
2. REPLACE DOUBLE SERVICE	7 EA	



	ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY. POST OFFICE BOX 29308 PHOENIX, ARIZONA 85038-9008 (602) 240-6860		PROJECT: VERDE VALLEY DATE: 9/7/2011 DRAWN BY: JS CHECKED BY: AH		The installation shown is to be installed in accordance with the Arizona Water Company standard specifications on file with the Arizona Department of Environmental Quality.
	REPLACE SERVICES ON KAY PLACE, ZUNI PLACE, NAVALJO PLACE, KAY PLACE, AGUA FRIA PLACE AND SAN JUAN PLACE.		0152 263-1100 1-800-SLACK-IT (602) 240-6860		
	REPLACE 7 DOUBLE SERVICES AND 3 SINGLE SERVICES ON KAY PLACE.		AS SHOWN		
	SHEET 5 OF 9		VV-0006		



QUANTITIES LIST		
ITEM	DESCRIPTION	QTY
1	REPLACE SINGLE SERVICE	3 EA.
2	REPLACE DOUBLE SERVICE	6 EA.
	TOTAL	9 EA.

40 20 0 20 40 60



ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29008
PHOENIX, ARIZONA 85038-0008
(602) 246-6860



ARIZONA WATER COMPANY
3805 N. BLACK CANYON HWY. POST OFFICE BOX 29008
PHOENIX, ARIZONA 85038-0008
(602) 246-6860

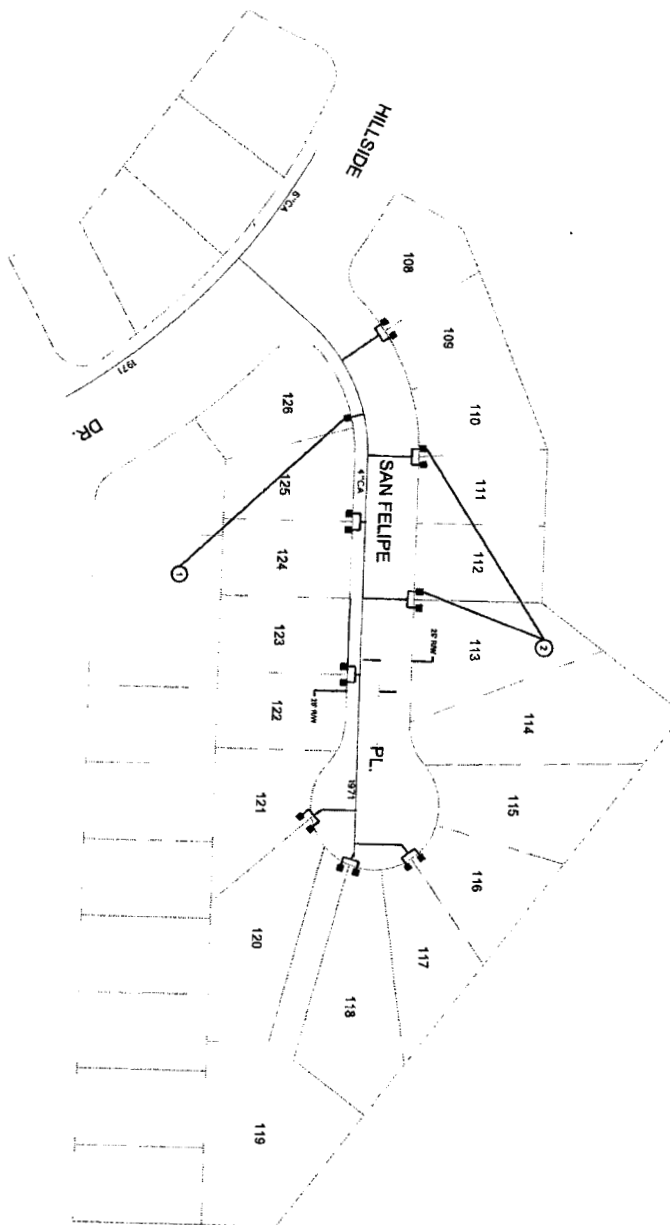
PROJECT NAME: REPLACE SERVICES ON HOPKINS PLACE, ZUNI PLACE, NAVAJO PLACE, KAY PLACE, ACOMA PLACE, AND SAN FELIX PLACE.
PROJECT SHEET NO: REPLACE 6 DOUBLE SERVICES AND 3 SINGLE SERVICES ON ACOMA PLACE.

PROJECT: VERDE VALLEY
SHEET NO: 0192
DATE: 8/7/2011
SCALE: AS SHOWN
DRAWN BY: JLS
CHECKED BY: AH

The information shown is to be used in accordance with the Arizona Water Company standard specifications as approved by the Arizona Department of Environmental Quality.

263-1100
1:500 SCALE-IT
Project: Verde Valley

SHEET 6 OF 9



QUANTITIES LIST		
ITEM	DESCRIPTION	QTY
1	REPLACE SINGLE SERVICE	1 EA
2	REPLACE DOUBLE SERVICE	8 EA

WV-0006
SHEET 7 OF 9



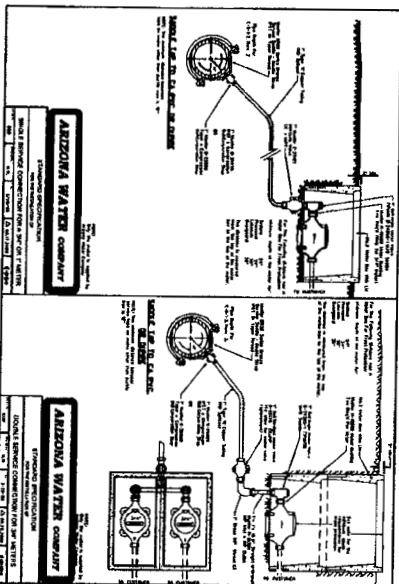
ARIZONA WATER COMPANY

3005 N. BLACK CANYON HWY. POST OFFICE BOX 28008
PHOENIX, ARIZONA 85028-0008
(602) 240-6860

PROJECT NO: 0192
REPLACE SERVICES ON HOPKINS PLACE, ZUNI PLACE,
NAVAJO PLACE, KAY PLACE, ACOMA PLACE, AND SAN FELIPE PLACE.
PROJECT SHEET NO: 263-1100
REPLACE 8 DOUBLE SERVICES AND 1 SINGLE SERVICE ON SAN FELIPE PLACE.


DATE: 5/7/2011
DRAWN BY: JS
CHECKED BY: AH

The installation shown is to be provided
in accordance with the Arizona Water
Company standard specifications as set
forth in the Arizona Department of
Environmental Quality
263-1100
1-800-STAKE-IT
water service center



ARIZONA WATER COMPANY
 STANDARD SPECIFICATIONS
 FOR IRRIGATION SYSTEMS
 1. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.
 2. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.
 3. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.

ARIZONA WATER COMPANY
 STANDARD SPECIFICATIONS
 FOR IRRIGATION SYSTEMS
 1. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.
 2. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.
 3. PUMP & PRESSURE TANK TO BE INSTALLED IN A CONCRETE PAD 4' X 4' X 4" THICK.



ARIZONA WATER COMPANY
 263-1100
 1-800-576-2171

ARIZONA WATER COMPANY
 W-0006
 SHEET 9 OF 9



ARIZONA WATER COMPANY

Verde Valley Division
66 Coffee Pot Drive, Ste 7 Sedona, AZ 86335
928-282-6665 | FAX 928-282-4131

PROPOSAL/CONTRACT

CONTRACTOR: J Wise Corp	SYSTEM: Verde Valley/Pinewood
ADDRESS: 5851 S. Wilson Drive	W.A. Map#: 1-4929
CITY ST ZIP: Chandler, AZ 85249	BID DUE DATE: October 31, 2011

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings, (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
- Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
- Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
- Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. The materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
- Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project Invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statutes ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §40-601 B.S.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
- Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment thereof. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
- The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
- Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or CPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project Invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
- Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 60 calendar days after the Commencement Notice is issued.
- Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project Invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be estimated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
- The amount of applicable liquidated damages for Contractor's failure to deliver or perform within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project Invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

- All services under asphalt to be encased in 2" schedule 40 PVC conduit
- Include road cuts and replacement in pricing where applicable
- All road cuts and replacements to comply with Coconino County Specifications
- Contractor is responsible for hot taps

CONTRACTOR	PROPOSAL/CONTRACT ACCEPTED:
J Wise Corp	ARIZONA WATER COMPANY
By:	By:
Print Name: Barry W. Senberger	Print Name: Fredrick K. Schneider, PE
Title: V.P.	Title: Vice President - Engineering
Date: 10-31-2011	Date: 4-9-2012

ARIZONA WATER COMPANY

Woods Valley Division
65 Coffee Pot Drive, Ste 7 Sedona, AZ 86336
928-282-5555 | FAX 928-282-6121

PROPOSAL/CONTRACT

CONTRACTOR: <u>J Wise Corp</u>		SYSTEM Verde Valley/Pinewood
AZ CONTRACTOR LICENSE NO: <u>076422</u>	CLASSIFICATION: <u>A</u>	W.A. No: <u>1-4929</u>
ADDRESS: <u>5851 S. Wilson Drive</u>		END DATE <u>October 31, 2011</u>
CITY ST ZIP <u>Chandler, AZ 85249</u>		NO BOND REQUIRED <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

DESCRIPTION OF PROJECT: Replace water services in Pinewood on Hopi Place, Zuni Place, Navajo Place, Kay Place, Acoma Place and San Felipe Place complete as per Arizona Water Company construction specifications E-8-1.

[illegible]

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.

π

JL PROPOSAL CONTRACT | 10/12/2019

Page 2

642000 | F03 | E-9-11-500



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
6/15/2011

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER GBP Risk Solutions www.GBPrs.com 4544 E Camp Lowell Dr Tucson AZ 85712-1282		CONTACT Laura Harder, CIC PHONE (520) 571-7737 FAX (520) 971-9118 PRODUCER CUSTOMER ID# 00002566	
INSURED J Wise Corporation 8987-309 E Tanque Verde #286 Tucson AZ 85749		INSURER(S) AFFORDING COVERAGE INSURER A: Valley Forge Ins. Co. 20508 INSURER B: CHA Insurance Companies 020435 INSURER C: Continental Casualty Co. 20443 INSURER D: INSURER E: INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 11/12 GL/AL/UMB **REVISION NUMBER:**
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

LINE	TYPE OF INSURANCE	ADDITIONAL INSURED	POLICY NUMBER	POLICY EFF. DATE (MM/DD/YYYY)	POLICY EXP. DATE (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY					EACH OCCURRENCE \$ 1,000,000
	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY		2093128790	6/1/2011	6/1/2012	DAMAGE TO RENTED PREMISES (Per occurrence) \$ 100,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR					MED EXP (Any one person) \$ 5,000
						PERSONAL & ADV INJURY \$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:					GENERAL AGGREGATE \$ 2,000,000
	<input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC					PRODUCTS - COMP/PROP AGG \$ 2,000,000
B	AUTOMOBILE LIABILITY					COMBINED SINGLE LIMIT (Per accident) \$ 1,000,000
	<input checked="" type="checkbox"/> ANY AUTO		2093128770	6/1/2011	6/1/2012	BODILY INJURY (Per person) \$
	<input type="checkbox"/> ALL OWNED AUTOS					BODILY INJURY (Per accident) \$
	<input type="checkbox"/> SCHEDULED AUTOS					PROPERTY DAMAGE (Per accident) \$
	<input checked="" type="checkbox"/> HIRED AUTOS					Underinsured motorist BI single \$ 1,000,000
	<input checked="" type="checkbox"/> NON-OWNED AUTOS					Underinsured motorist BI single \$ 1,000,000
C	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR					EACH OCCURRENCE \$ 2,000,000
	<input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE					AGGREGATE \$ 2,000,000
	<input type="checkbox"/> DEDUCTIBLE		2093128784	6/1/2011	6/1/2012	
	<input checked="" type="checkbox"/> RETENTION \$ 10,000					
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	Y/N	N/A			NO STATUTORY LIMITS <input type="checkbox"/> OTHER <input type="checkbox"/>
	ANY PROPRIETARY PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (If yes, describe in WRG)					E.L. EACH ACCIDENT \$
	DESCRIPTION OF OPERATIONS below					E.L. DISEASE - EA EMPLOYEE \$
						E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER Arizona Water Company Attn: John Snickers P. O. Box 400 Apache Junction, AZ 85217	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE L Beach, CIC/HARDER
---	--



Certificate of Insurance

Certificate Mailed To:

Name of Insured:

ARIZONA WATER CO.
3805 N. BLK CANYON HWY.
PHOENIX AZ 85015

J Wise Corp
8987 E Tanque Verde Rd
Ste 309 PMB 286
Tucson AZ 85749

Date Issued: 05/12/2011
Certificate Number: 108
Policy Number: 308775
Origin Date: 06/01/2000
Expiration Date: 06/01/2012
Liability Limits: 1000/1000/1000
(000 Omitted)

Proof of Coverage

Various AZ Location

Job Number:

Location:

Should the above policy be canceled by the SCF ARIZONA before the expiration date thereof, the SCF ARIZONA will endeavor to mail 30 days written notice to the above named Certificate Holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the SCF ARIZONA.

This Certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed hereon. This is to certify a workers' compensation policy has been issued to the insured listed hereon and is in force for the period referenced.

Certificate Issued To:

Arizona Water Co.
3805 N. Blk Canyon Hwy.
Phoenix AZ 85015

Authorized Representative



ARIZONA WATER COMPANY

COMMENCEMENT NOTICE

CONTRACTOR:

Mr. Barry Weisenberger
J Wise Corporation
5851 S. Wilson Drive
Chandler, AZ 85249

DATE: April 9, 2012**DIVISION:** VERDE VALLEY**SYSTEM:** VERDE VALLEY**W.A.:** 1-4929**THIS IS YOUR NOTICE TO PROCEED WITH THE FOLLOWING PROJECT(S):****DESCRIPTION OF WORK:**

Replace water services in Pinewood on Hopi Street, Zuni Place, Navajo Place, Kay Place, Acoma Place and San Felipe Place complete as per Arizona Water Company construction specifications E-8-1.

PERFORMANCE AND
PAYMENT BONDS
REQUIRED:

☒ Yes ☐ No

**TOTAL DAYS
ALLOWED:** 60

**COMPLETION
DATE:** June 11, 2012

Prior to the start of construction, please call Keith Self, Division Manager at 928-282-7092 to schedule a pre-construction meeting.

ARIZONA WATER COMPANY
Company

J WISE CORPORATION
Contractor (type name)

By**Title** Vice President - Engineering**By****Title**

AFH

W:\PROJECTS\2011\4929 PINWOOD SERVICE REPLACEMENTS\AGREEMENTS\CONTRACTS\E-3-18-2 J WISE COMMENCEMENT NOTICE 1-4929 PINWOOD SERVICES.DOCX

1/15/09 | FKS:wh | E-3-18-2



GREAT AMERICAN INSURANCE COMPANY
Ohio

CAUTION: You should use an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.

AIA Document A312

Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

J Wise Corporation
5851 S Wilson Drive
Chandler, AZ 85249

SURETY (Name and Principal Place of Business):

GREAT AMERICAN INSURANCE COMPANY
301 E. FOURTH STREET
CINCINNATI, OHIO 45202

OWNER (Name and Address):

Arizona Water Company
65 Coffee Pot Drive, Suite 7
Sedona, AZ 86336

CONSTRUCTION CONTRACT

Date: 4/9/2012

Amount: \$182,905.00

Description (Name and Location): Replace Water Services in Pinewood on Hopi Place, Zuni Place, Navajo Place, Kay Place, Acoma Place and San Felipe Place

BOND

Date (Not earlier than Construction Contract Date): 4/11/2012

Amount: \$182,905.00

Modifications to this Bond:

☐ None

☒ See Page 6

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

J Wise Corporation

Signature: _____

Name and Title: Barry Weisenberger
Vice President

(Any additional signatures appear on page 6)

SURETY GREAT AMERICAN INSURANCE COMPANY

Company: (Corporate Seal)

Signature: _____

Name and Title: Christina M. Tighe
Attorney-in-Fact

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

GBP Risk Solutions
4544 E Camp Lowell Dr., Suite 110
Tucson, AZ 85712

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2 With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4 The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

- 1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
- 2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
- 3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5 If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6 When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this

Bond shall be construed as a statutory bond and not as a common law bond.

14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the

Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

1. Paragraph 5 above shall be amended to delete the word "or" and insert the word "and" in its place.
2. Paragraph 6 above is deleted in its entirety and replaced with the following:

"6. After the Claimant has satisfied the conditions of Paragraph 4 and submitted all supporting documentation and any proof of claim requested by the Surety, then the Surety shall, with reasonable promptness, (1) notify the Claimant of the amounts that are undisputed and the basis for challenging any amounts that are disputed, including, but not limited to, the lack of substantiating documentation to support the claim as to entitlement or amount, and (2) pay or make arrangements for payment of any undisputed amount. The failure of the Surety to timely discharge its obligations under this paragraph or to dispute or identify any specific defense to all or any part of a claim shall not be deemed to be an admission of liability by the Surety as to such claim or otherwise constitute a waiver of the Contractor's or Surety's defenses to, or right to dispute, such claim."

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

J Wise Corporation

Signature: 

Name and Title: Barry Weisenberger, Vice-President

Address: 5851 S. Wilson Drive

Chandler, AZ 85249

SURETY GREAT AMERICAN INSURANCE COMPANY

Company:

(Corporate Seal)

Signature: 

Name and Title: Christina M. Tighe, Attorney-in-Fact

Address: 4544 E. Camp Lowell Dr., Suite 110

Tucson, AZ 85712

GREAT AMERICAN INSURANCE COMPANY®

Administrative Office: 301 E 4TH STREET • CINCINNATI, OHIO 45202 • 513-369-5000 • FAX 513-723-2740

The number of persons authorized by
this power of attorney is not more than **FOUR**

No. 014295

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the GREAT AMERICAN INSURANCE COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Ohio, does hereby nominate, constitute and appoint the person or persons named below, each individually if more than one is named, its true and lawful attorney-in-fact, for it and in its name, place and stead to execute on behalf of the said Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; provided that the liability of the said Company on any such bond, undertaking or contract of suretyship executed under this authority shall not exceed the limit stated below.

Name
RICHARD T. GREGSON
LAWRENCE J. BEACH
CHRISTINA M. TIGHE
SHARON A. ESCANDON

Address
ALL OF
TUCSON,
ARIZONA

Limit of Power
ALL
\$75,000,000.00

This Power of Attorney revokes all previous powers issued in behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF the GREAT AMERICAN INSURANCE COMPANY has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 28th day of, APRIL, 2011.

Attest



Atty L C. B.

GREAT AMERICAN INSURANCE COMPANY

David C. Kitchen

STATE OF OHIO, COUNTY OF HAMILTON - ss:

DAVID C. KITCHIN (513-412-4602)

On this 28th day of APRIL, 2011, before me personally appeared DAVID C. KITCHIN, to me known, being duly sworn, deposes and says that he resides in Cincinnati, Ohio, that he is a Divisional Senior Vice President of the Bond Division of Great American Insurance Company, the Company described in and which executed the above instrument; that he knows the seal of the said Company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by authority of his office under the By-Laws of said Company, and that he signed his name thereto by like authority.



KAREN L. GROSHEIM
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 02-20-16

Karen L. Groshiem

This Power of Attorney is granted by authority of the following resolutions adopted by the Board of Directors of Great American Insurance Company by unanimous written consent dated June 9, 2008.

RESOLVED: That the Divisional President, the several Divisional Senior Vice Presidents, Divisional Vice Presidents and Divisional Assistant Vice Presidents, or any one of them, be and hereby is authorized, from time to time, to appoint one or more Attorneys-in-Fact to execute on behalf of the Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; to prescribe their respective duties and the respective limits of their authority; and to revoke any such appointment at any time.

RESOLVED FURTHER: That the Company seal and the signature of any of the aforesaid officers and any Secretary or Assistant Secretary of the Company may be affixed by facsimile to any power of attorney or certificate of either given for the execution of any bond, undertaking, contract of suretyship, or other written obligation in the nature thereof, such signature and seal when so used being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

CERTIFICATION

I, STEPHEN C. BERAHA, Assistant Secretary of Great American Insurance Company, do hereby certify that the foregoing Power of Attorney and the Resolutions of the Board of Directors of June 9, 2008 have not been revoked and are now in full force and effect.

Signed and sealed this 11th day of April, 2012.



Atty L C. B.



ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH 2010 REVISIONS

ARIZONA WATER COMPANY

GENERAL CONDITIONS OF CONTRACT: E-4-1

ARIZONA WATER COMPANY

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. Invitation to Bid. The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. Contract. The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. Inspector. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor; Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. 40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

- A. The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.
- B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

- C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all labor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

ARIZONA WATER COMPANY

CONSTRUCTION SPECIFICATIONS: E-8-1

ERRATA 2010

ARIZONA WATER COMPANY

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. **Company.** The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. **Company's Authorized Representative.** The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. **Contractor.** The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. **Construction Drawings.** The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. **Contract.** The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

**CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON**

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 - 4" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 - 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 - 2½" Hose Nozzles, NPT (Miami only.)

- (5) 1 – 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 – 2½" Hose Nozzle, NST (Superior only.)
- b. **FITTINGS:** Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. **DETECTOR CHECK VALVE:** Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. **GATE VALVES:** Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12" ; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. **TRACER WIRE and WARNING TAPE:**
 - 1. **TRACER WIRE:** Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. **WARNING TAPE:** Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. **AIR RELEASE VALVE:** Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. **PRESSURE RELIEF VALVE:** Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. **MEGA LUG:** Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. **METER BOXES:**
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. **PIPE, COPPER:** Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. **PIPE, DUCTILE IRON:** Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)

l. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.

m. POLYETHYLENE ENCASUREMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.

n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".

Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).

- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" – 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
- (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.
- (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

- y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8 x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturer's recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

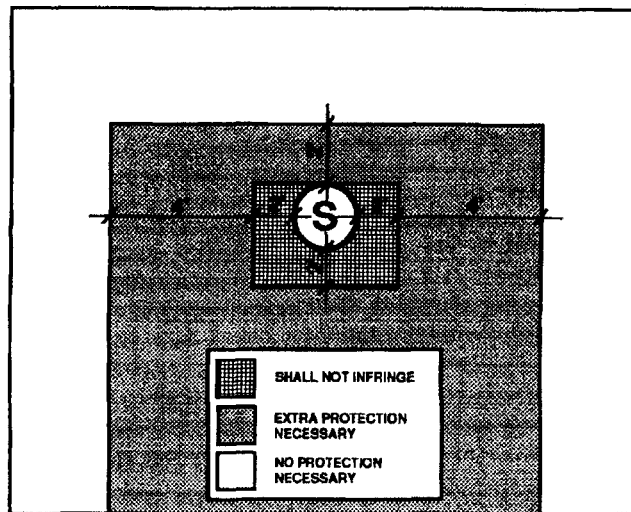
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

- a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



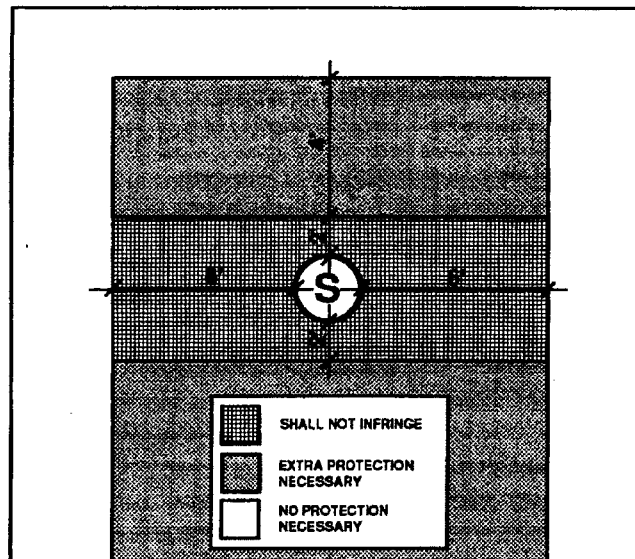
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

- b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - 1. Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - 2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes ($7^{\circ} 7'$) or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes ($5^{\circ} 21'$) or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY


To: Tony Geiger – US Pipe
Subject: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

November 24, 2010

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan
Clow Valve Company
8121 N. 10th Avenue
Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY

To: Jim Ryan – Clow Valve Company October 19, 2010
Subject: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves Page 2

We look forward to developing a long-term relationship with you and the Clow products.
If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

February 21, 2012

Contractor

Re: Fitting Specifications

Dear Contractor:

Effective March 1, 2012, Arizona Water Company (the "Company") has changed its fitting specifications for Ductile Iron Fittings and Ductile Iron Flanged Fittings ("Fittings"). All Fittings purchased by the Company, on the Company's behalf or installed with the intent of being conveyed to the Company, must comply with the requirements noted below.

Previous Fitting Specifications:

Fittings

Manufactured by Tyler or Union, Crosses, Elbows, Tees, Cap Reducer, Adapter, Plug, Blind Flange and Tapped Flange: Ductile Iron, Class 350, SSB, and Cast Iron Cement Lined.

New Fitting Specification:

Ductile Iron Fittings (Push-On and Mechanical Joint)

Ductile Iron Push-On and Mechanical Joint ("MJ") fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C153/A21.53 for compact design and ANSI/AWWA C110/A21.10 for full body design. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness cement mortar lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. MJ fittings with flanged end(s) will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. All fittings shall be NSF-61 listed for use with potable water.

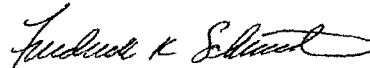
Ductile Iron Flanged Fittings

E-MAIL: mail@azwater.com

Ductile Iron flanged fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C110/A21.10 design. Flange ends will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. All fittings shall be NSF-61 listed for use with potable water.

If you have any questions or require further information, please contact me at 602-240-6860.

Very truly yours,



Fredrick K. Schneider, PE
Vice President - Engineering
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

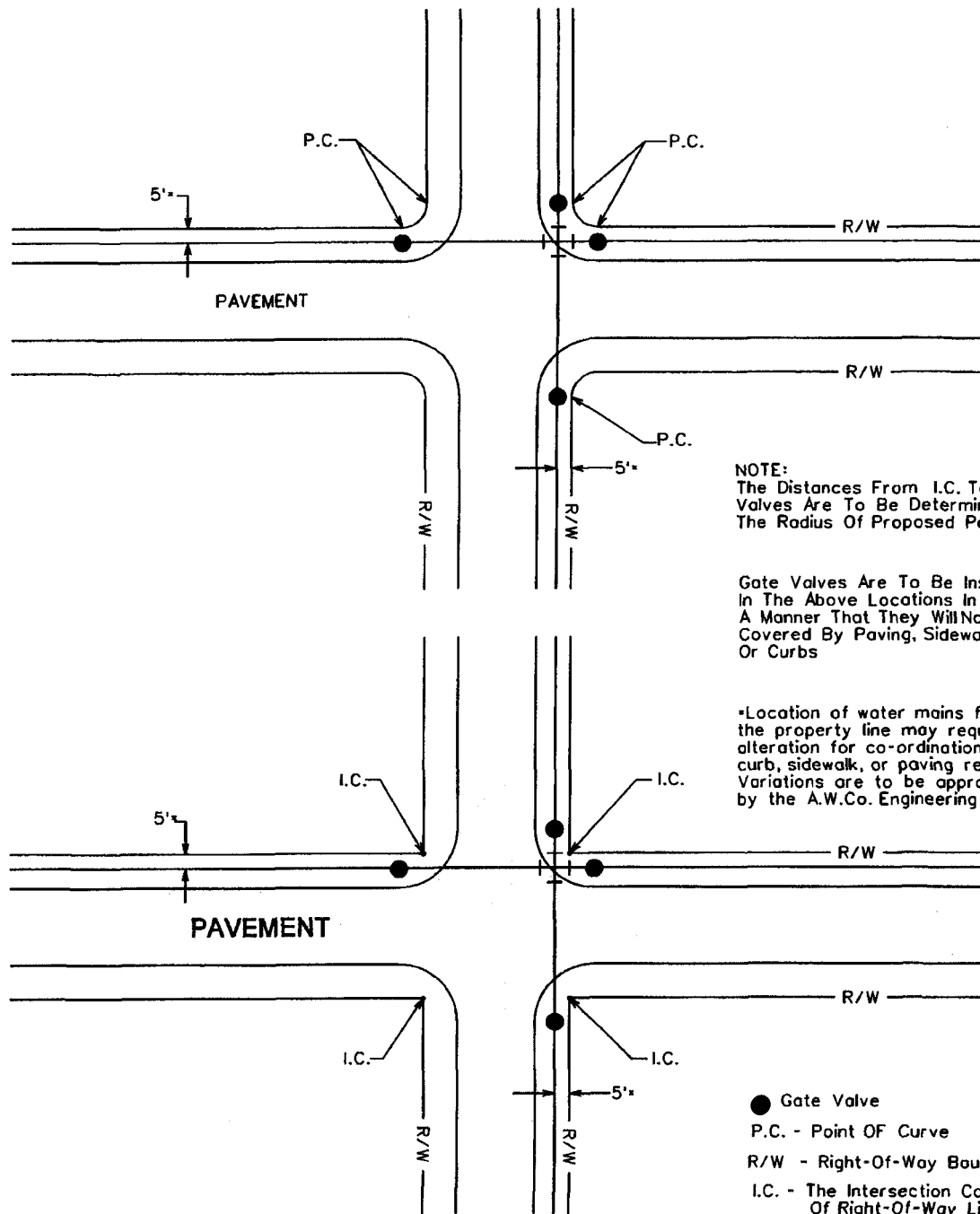
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS - DUCTILE IRON

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ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL GATE VALVE LOCATIONS

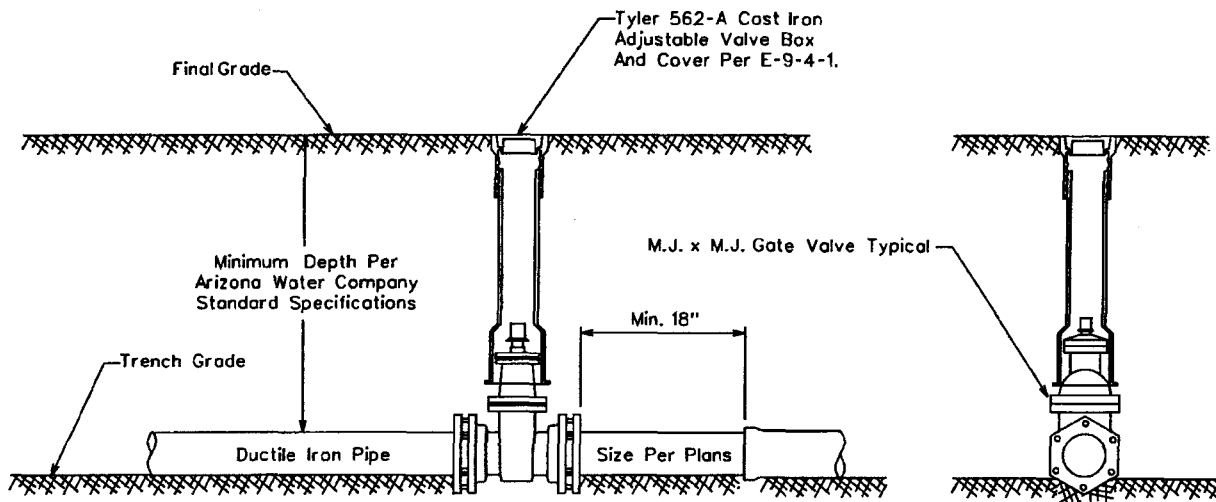
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FOR 6" THROUGH 12" GATE VALVES

Mueller Resilient Wedge Gate Valves
Catalog Number A-2360-__
ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resilient Wedge Gate Valves
Catalog Number A-2361-__
ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY:

CB

APPROVED BY:

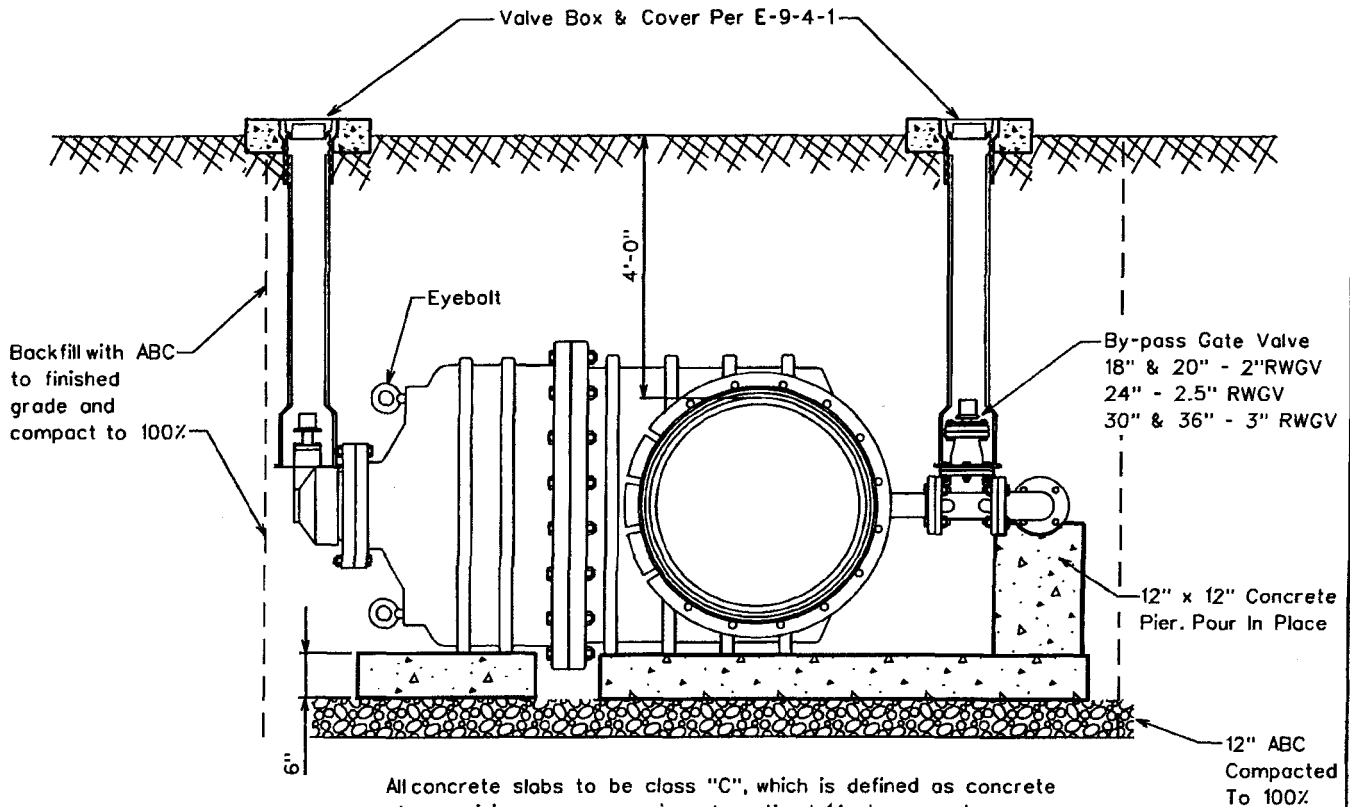
MW

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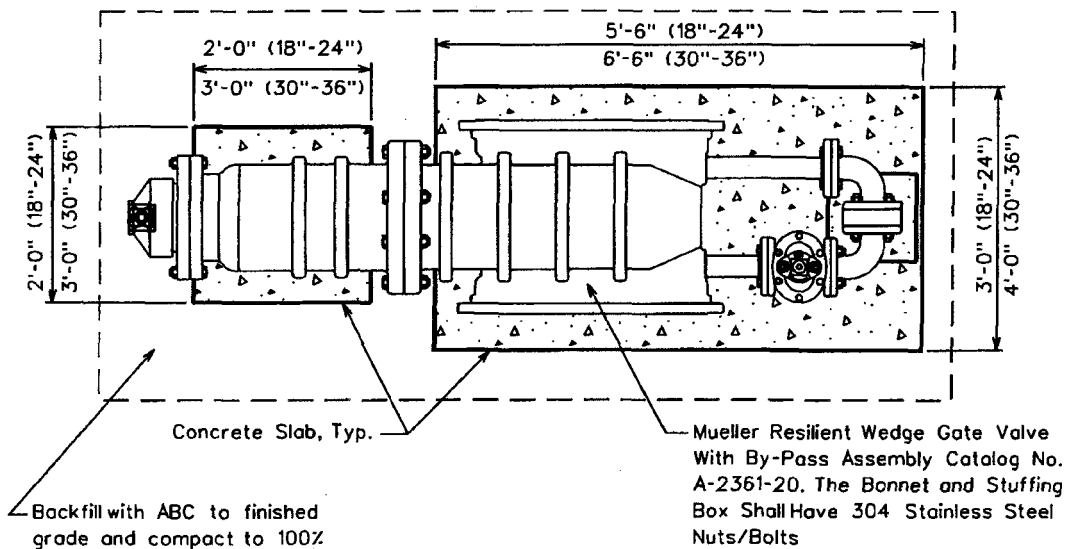
03.20.1986

△ 08.23.2006

E-9-2-1



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1500psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No. A-26441. The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITH BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY:

CB

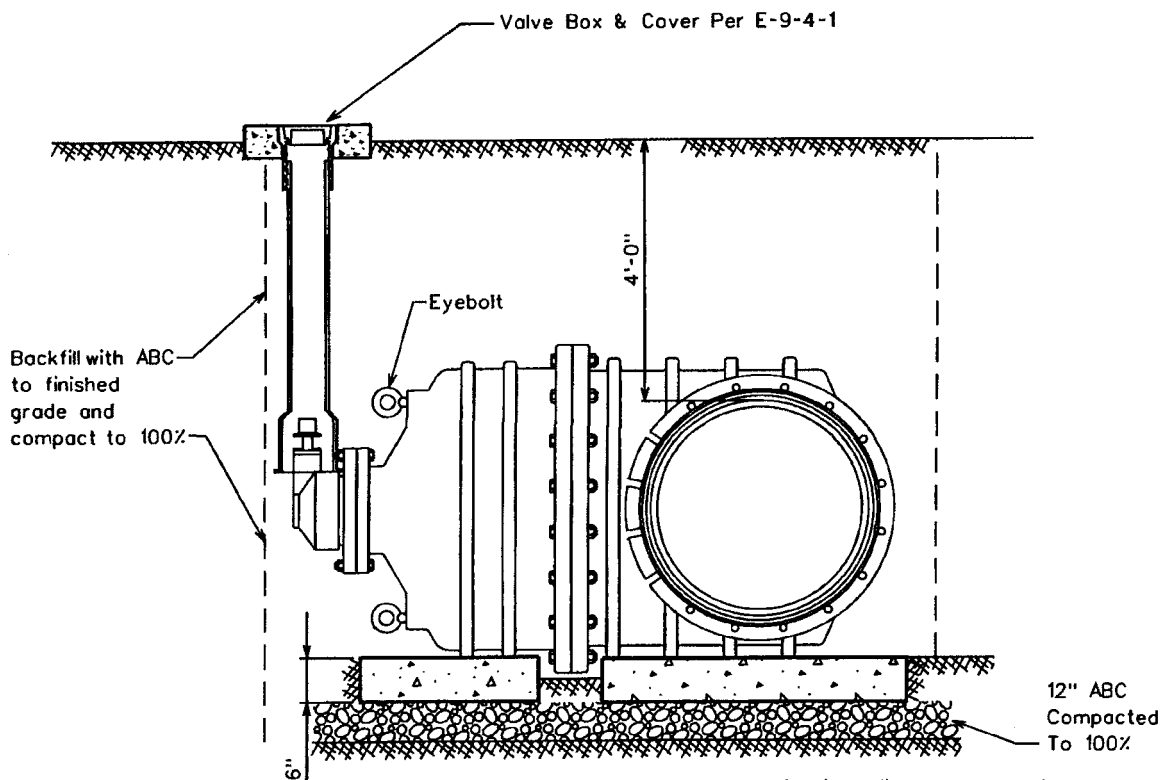
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DATE:

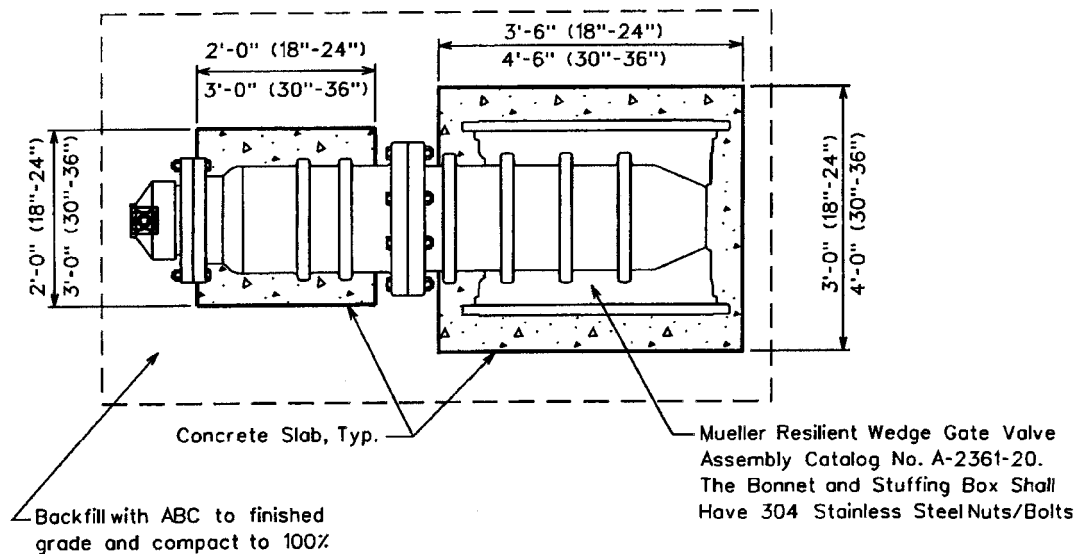
12.07.2004



E-9-2-2



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No. A-26441. The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES
WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY:

CB

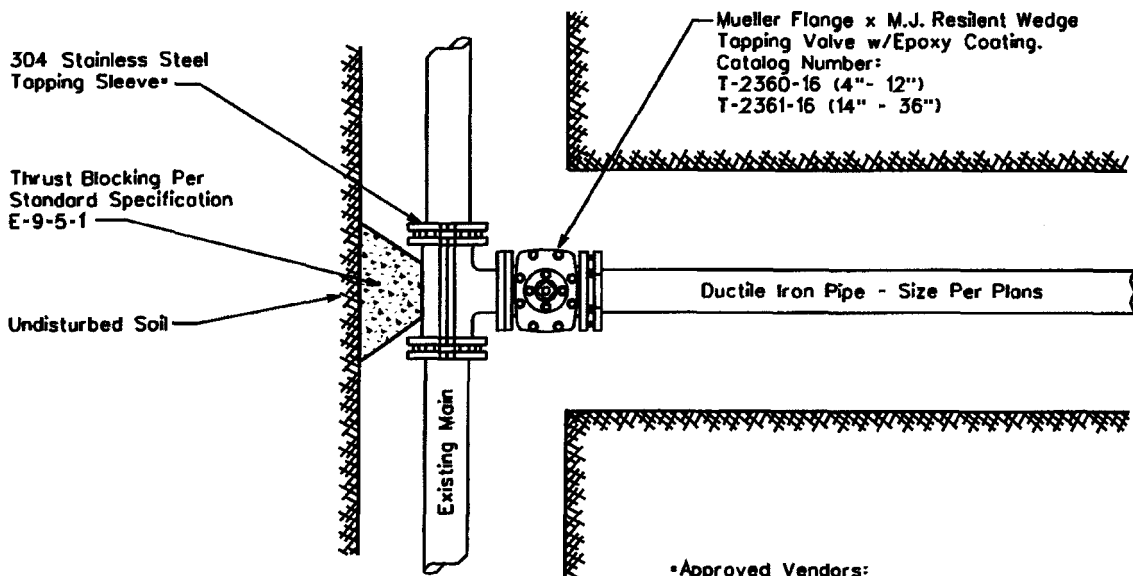
APPROVED BY:

DATE

12.07.2004

△ 5.13.2005

E-9-2-3

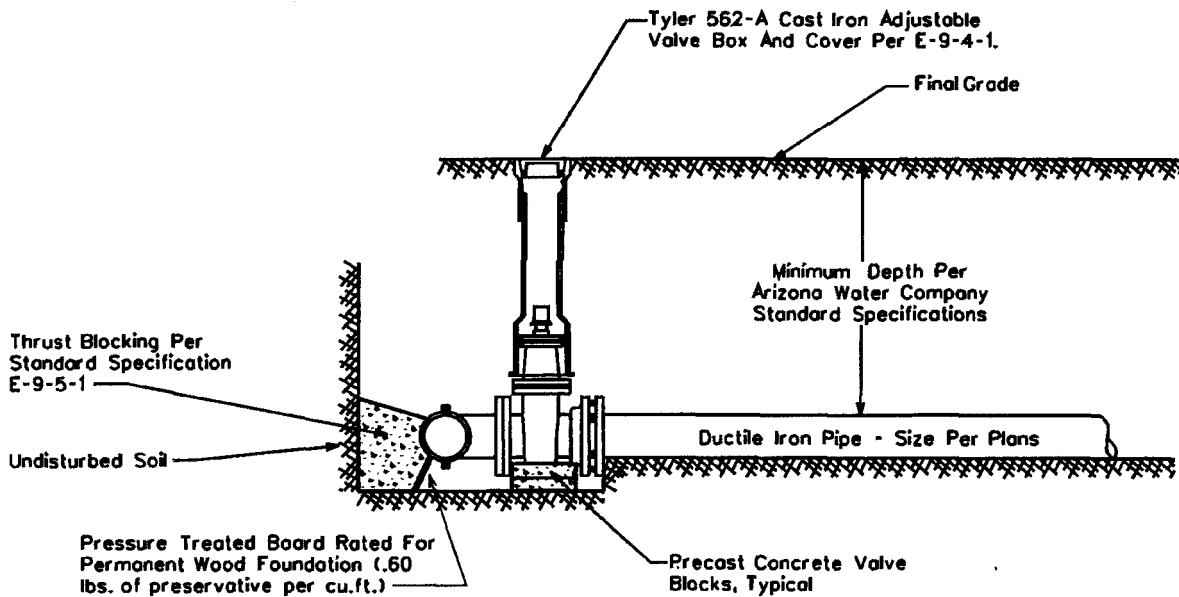


NOTE:

1. All flanges, bolts, and nuts shall be kept free of concrete.
2. Air pressure test the tapping sleeve before the live tap is made.
3. Polywrap all new fittings

***Approved Vendors:**

Mueller, Catalog No. H304, 304 Stainless Steel
 JCM, Model 432, 304 Stainless Steel
 Romac, 'SST', 304 Stainless Steel
 Cascade, 'CST-EX', 304 Stainless Steel

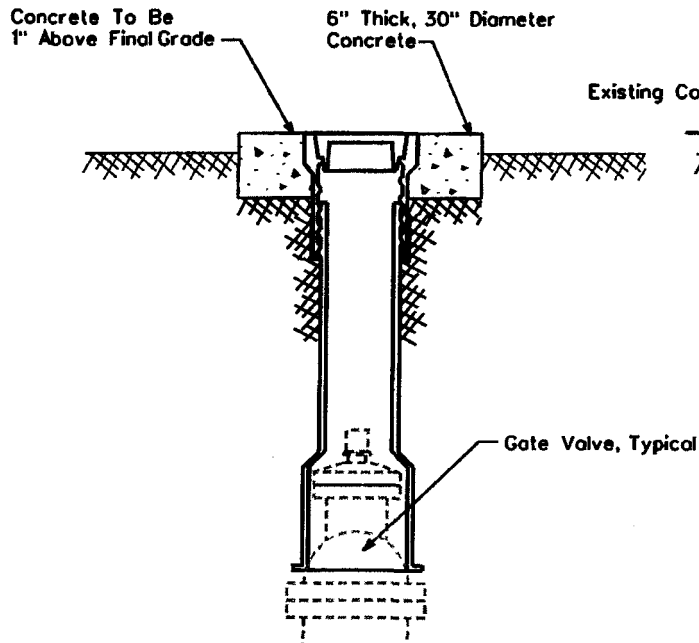


ARIZONA WATER COMPANY

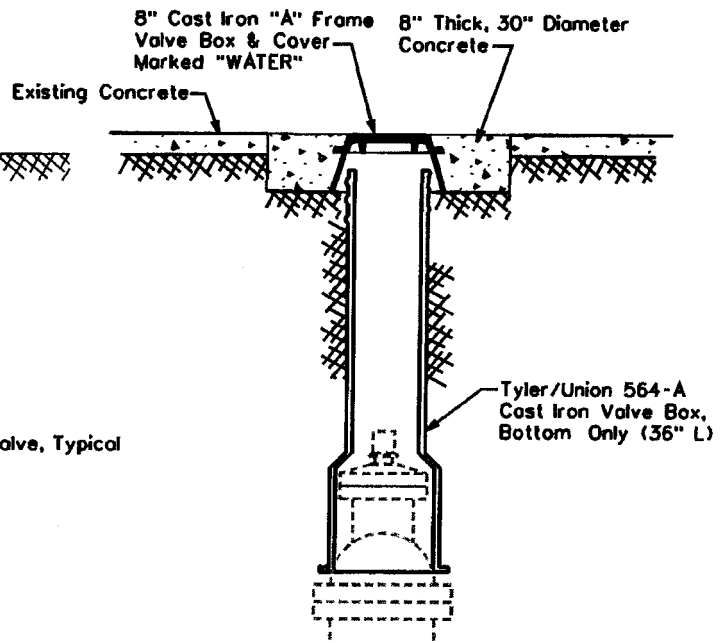
STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL TAPPING SLEEVE AND VALVE

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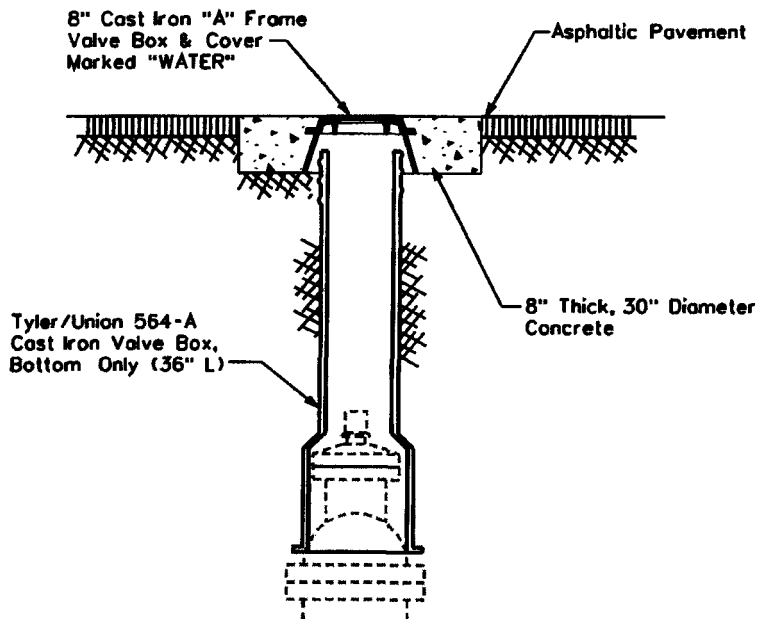


NON-VEHICULAR VALVE BOX



CONCRETE VALVE BOX

For Areas Subject To Vehicular Traffic



ASPHALT VALVE BOX

For Areas Subject To Vehicular Traffic

NOTE:

1. The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"
For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"
3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

ARIZONA WATER COMPANY

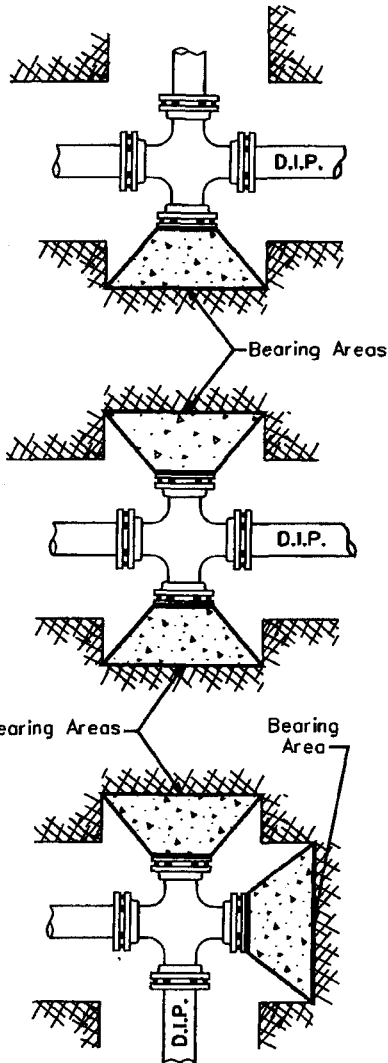
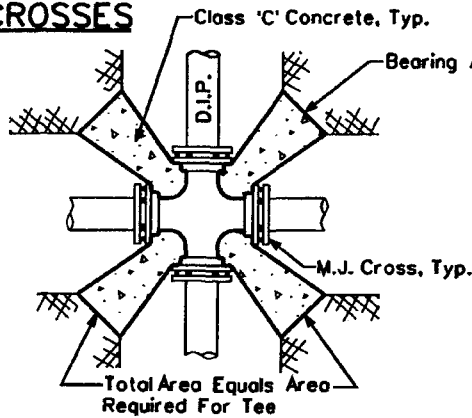
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

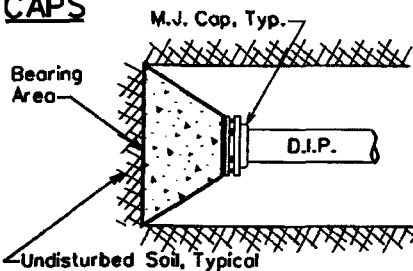
**TYPICAL VALVE SUBJECT TO NON-VEHICULAR
AND VEHICULAR TRAFFIC**

DRAWN BY:	CB	APPROVED BY:	MW	DATE	03.20.1986	8.24.2006	E-9-4-1
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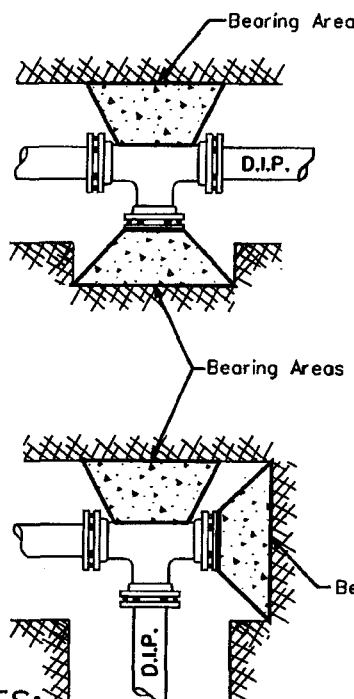
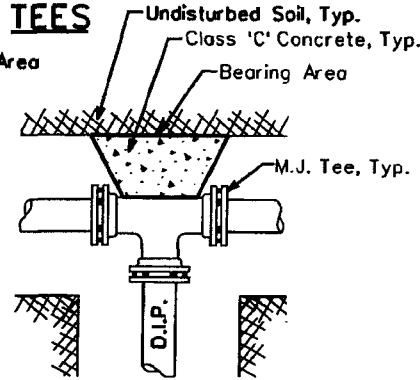
CROSSES



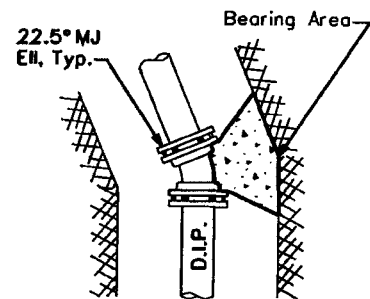
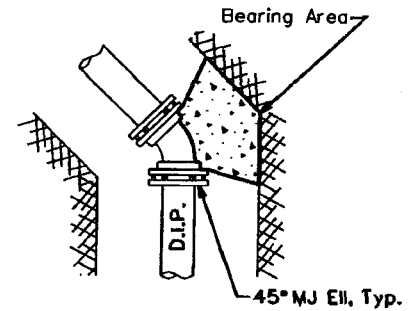
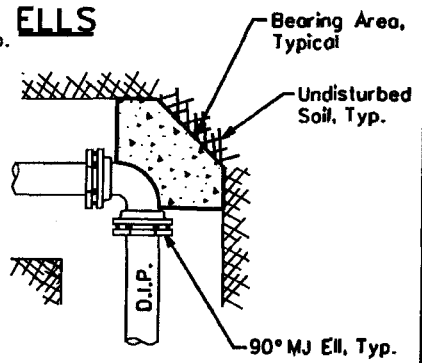
CAPS



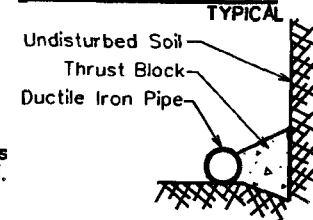
TEES



ELLS



CROSS SECTION



NOTES:

1. Use minimum Class 'C' concrete, which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.
2. Thrust blocks are to bear on undisturbed earth with minimum bearing area as shown. If not undisturbed, areas will be increased as required.
3. Place the pressure treated form board in front of all plugs before pouring thrust blocks.
4. Form all non-bearing areas to prevent any concrete from entering any joint.
5. All flanges, bolts and nuts shall be kept free of concrete.
6. Center the bearing area on the pipe centerline and force line.
7. All pipe fittings to be wrapped with polyethylene pipe wrap prior to thrust block installation. (where applicable)

THRUST BLOCK SCHEDULE

PIPE SIZE	TEE, 45°, AND 22.5° ELLS, & PLUGS	90° ELLS
6" And Under	4 Sq.Ft.	6 Sq.Ft.
8"	6 Sq.Ft.	9 Sq.Ft.
12"	13 Sq.Ft.	20 Sq.Ft.
16"	23 Sq.Ft.	32 Sq.Ft.
18" And Larger	Calculated Per Project	

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL THRUST BLOCKING SCHEDULE

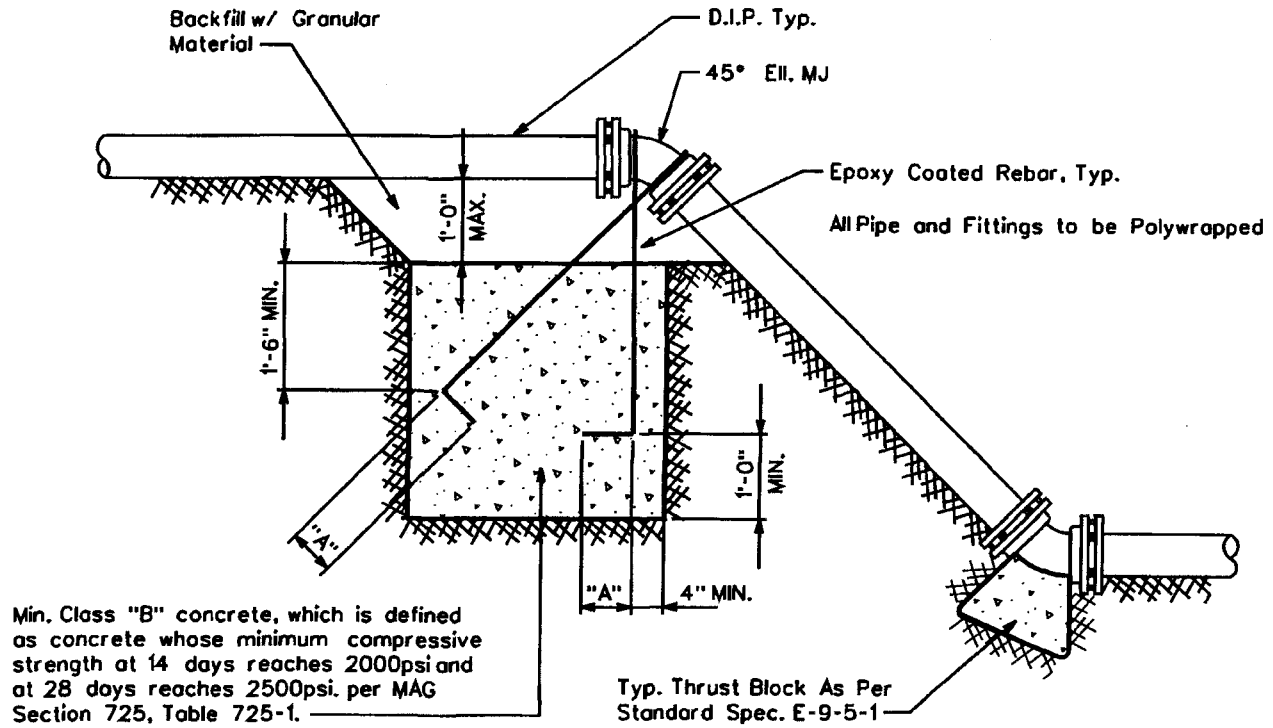
DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 05.27.2005	E-9-5-1
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NOTES

1. Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.
2. Bars To Have 90° Hook @ Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	* Min. Block Dimension (WxHxL)
6"	#6	6"	3'x3'x3'
8"	#6	9"	4'x3'x4'
12"	#8	9"	5'x4'x5'
16"	#9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

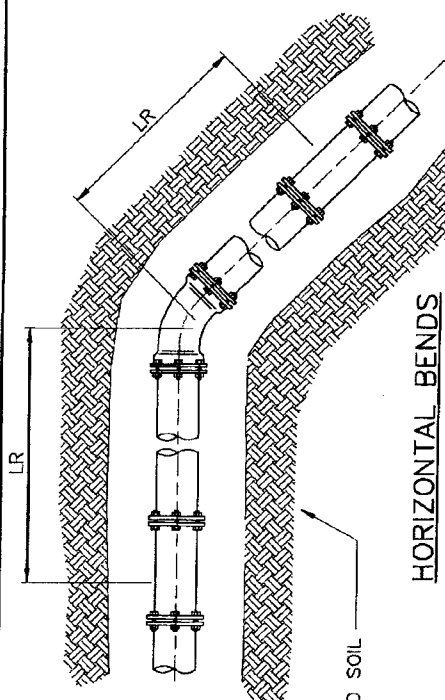
DRAWN BY: JPK

APPROVED BY: MJW

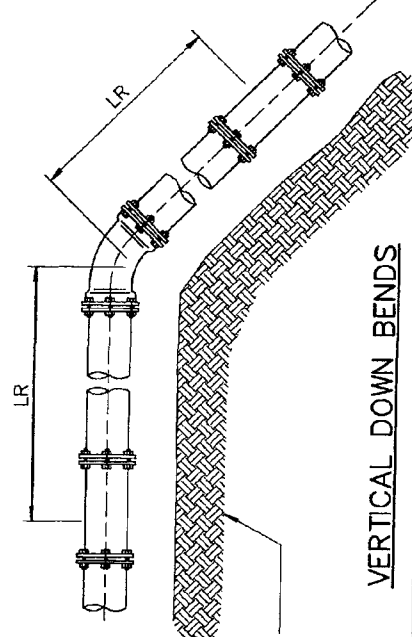
DATE: 7-5-96

△ 01.16.2007

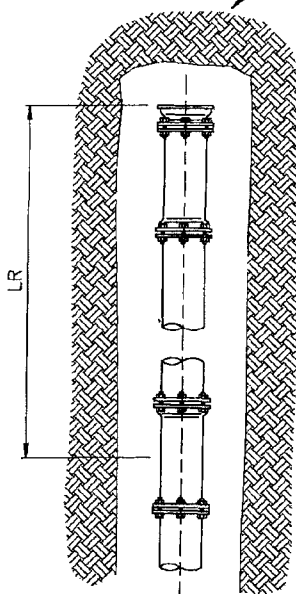
E-9-5-2



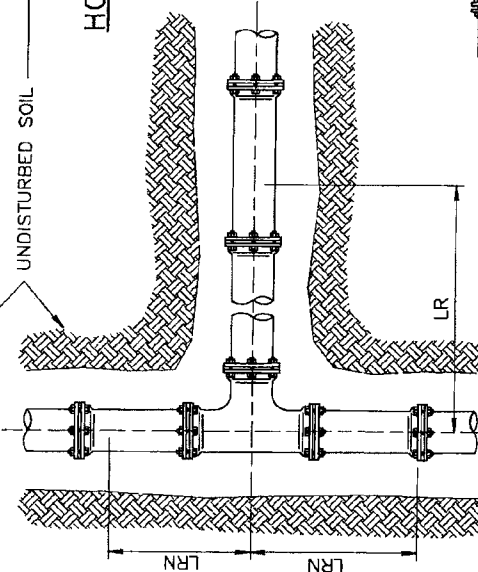
HORIZONTAL BENDS



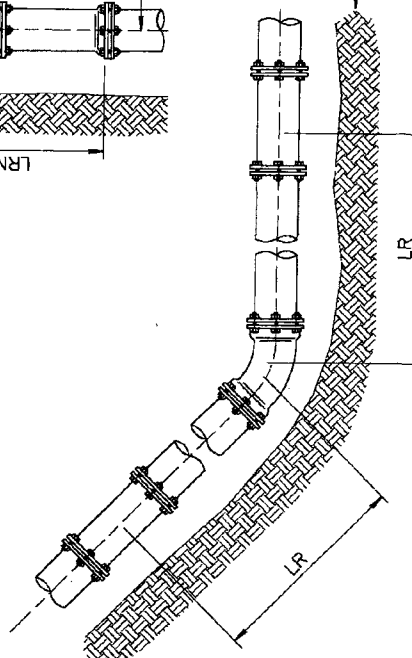
VERTICAL DOWN BENDS



DEAD ENDS



TEES



VERTICAL UP BEND

LRN = SHORTEST LENGTH
OF PIPE RESTRAINED TO
THE RUN OF THE TEE
FITTING (BOTH SIDES OF TEE).

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

DRAWN BY: CB	APPROVED BY: MW	DATE: 01.16.2007	△	E-9-5-3-1
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RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE

NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS						DEAD ENDS
	90°	45°	22-1/2°	LRN=0'	LRN=10'	90° BEND FITTINGS		45° BEND FITTINGS		22-1/2° BEND FITTINGS		
						DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND	
4	18	7	4	30	8	31	18	13	7	6	3	31
6	25	10	5	43	20	44	25	18	10	9	5	44
8	32	13	6	56	34	58	32	24	13	11	6	58
10	38	16	8	68	45	69	38	29	16	14	8	69
12	45	19	9	80	57	81	45	34	19	16	9	81
14	51	21	10	91	68	92	51	38	21	18	10	92
16	57	24	11	103	79	104	57	43	24	21	11	104
18	62	26	12	113	90	115	62	48	26	23	12	115
20	68	28	14	125	100	126	68	52	28	25	14	126
24	79	33	16	145	121	147	79	61	33	29	16	147

RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP

NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS						DEAD ENDS
	90°	45°	22-1/2°	LRN=0'	LRN=10'	90° BEND FITTINGS		45° BEND FITTINGS		22-1/2° BEND FITTINGS		
						DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND	
4	26	11	5	69	18	72	26	30	11	14	5	72
6	36	15	7	99	47	102	36	42	15	20	7	102
8	47	19	9	130	78	133	47	55	19	26	9	133
10	56	23	11	157	103	159	56	66	23	32	11	159
12	65	27	13	185	131	187	65	77	27	37	13	187
14	74	31	15	211	156	214	74	89	31	42	15	214
16	82	34	16	238	183	241	82	100	34	48	16	241
18	90	37	18	263	207	266	90	110	38	53	18	266
20	98	41	20	289	233	292	98	121	41	58	20	292
24	113	47	22	337	280	340	113	141	47	68	22	340

NOTES:

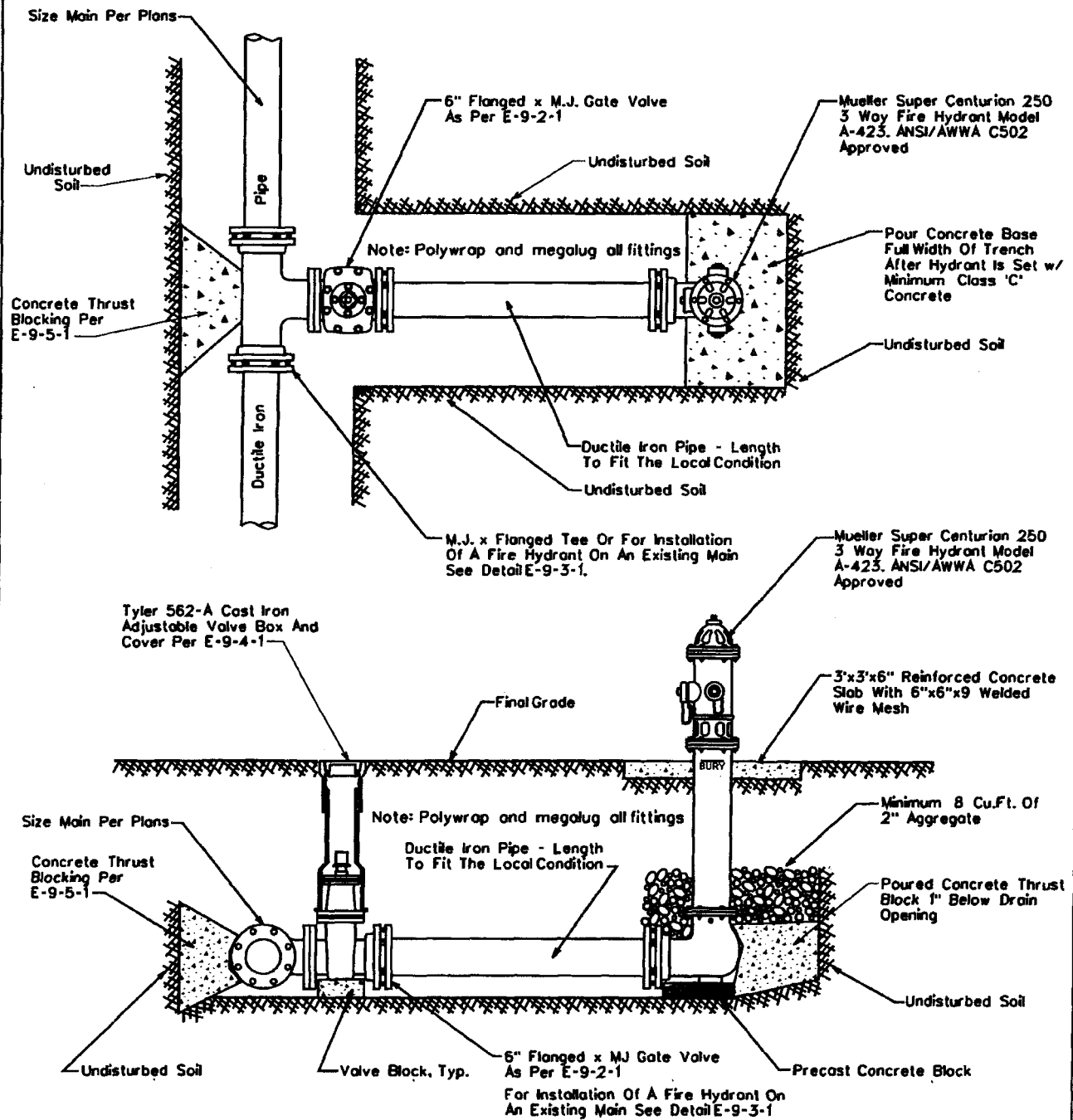
1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.
2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

DRAWN BY: CB APPROVED BY: MW DATE: 01.16.2007 E-9-5-3-2



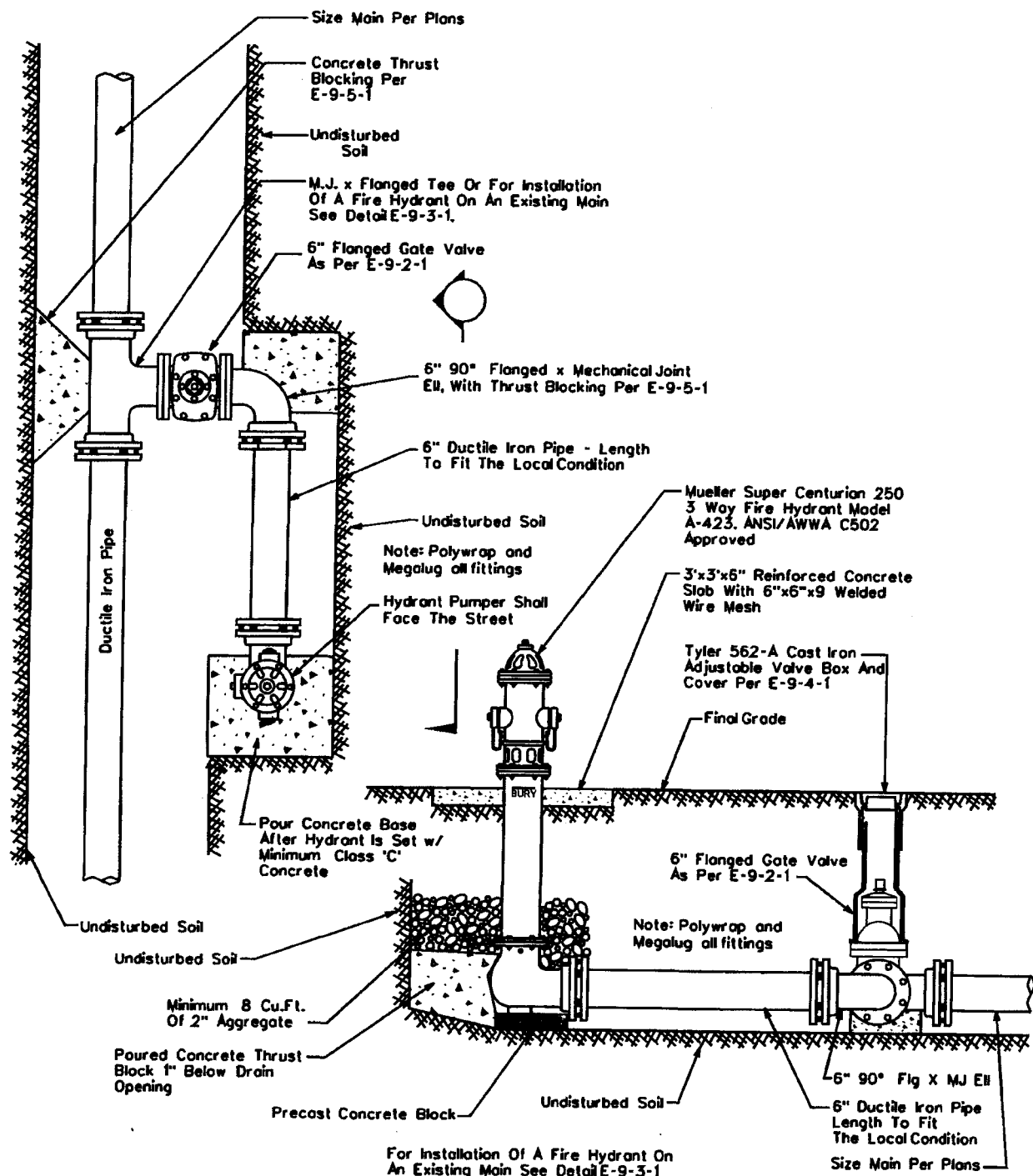
NOTE: All Flanges, Bolts, Nuts and Drain Holes Shall Be Kept Free Of Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL PERPENDICULAR FIRE HYDRANT

DRAWN BY: CB	APPROVED BY: MW	DATE: 1-28-91	08.24.2006	E-9-6-1
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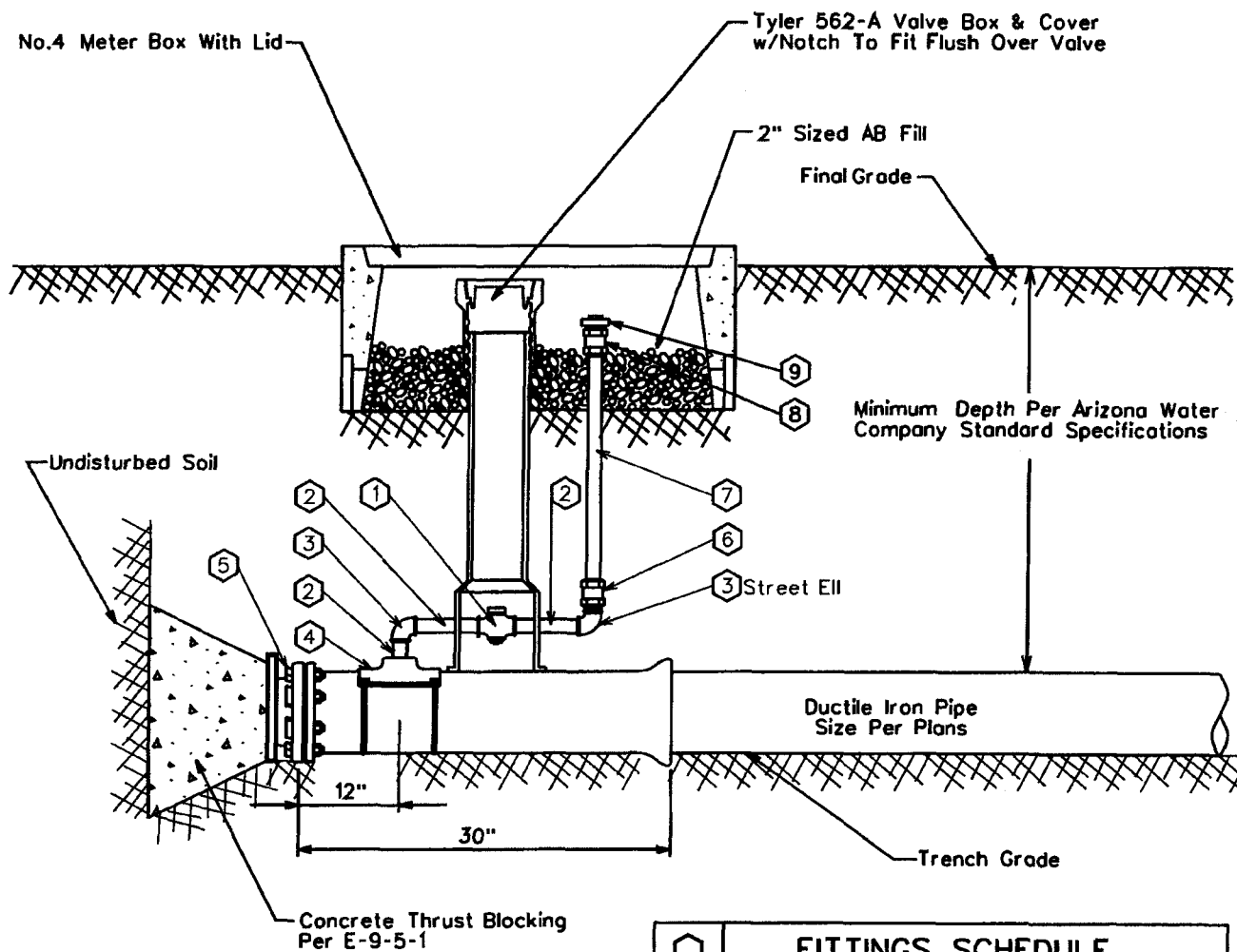
NOTE: All Flanges, Bolts, Nuts
And Drain Holes Shall Be Kept
Free Of Concrete.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL PARALLEL FIRE HYDRANT

DRAWN BY: JW	APPROVED BY: MW	DATE: 03.20.1986	△ 08.24.2006	E-9-7-1
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⬡	FITTINGS SCHEDULE
1.	2" Mueller 300 Bolt Curb Valve B-20283 FIP x FIP w/ 2" Mueller Brass Square Wrench Nut Adapter B-20299
2.	2" Brass Nipple - Length To Fit Field Conditions
3.	2" Brass 90° Elbow, IPST
4.	Mueller Double Strap Bronze Service Saddle - BR28
5.	M.J. Plug - Megalug Restraints May Be Required
6.	2" Straight Coupling CC x FIP H-15451
7.	2" Copper Pipe
8.	2" Straight Coupling CC x MIP H-15428
9.	2" Square Head Plug, MIP

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

2" BLOWOFF ASSEMBLY

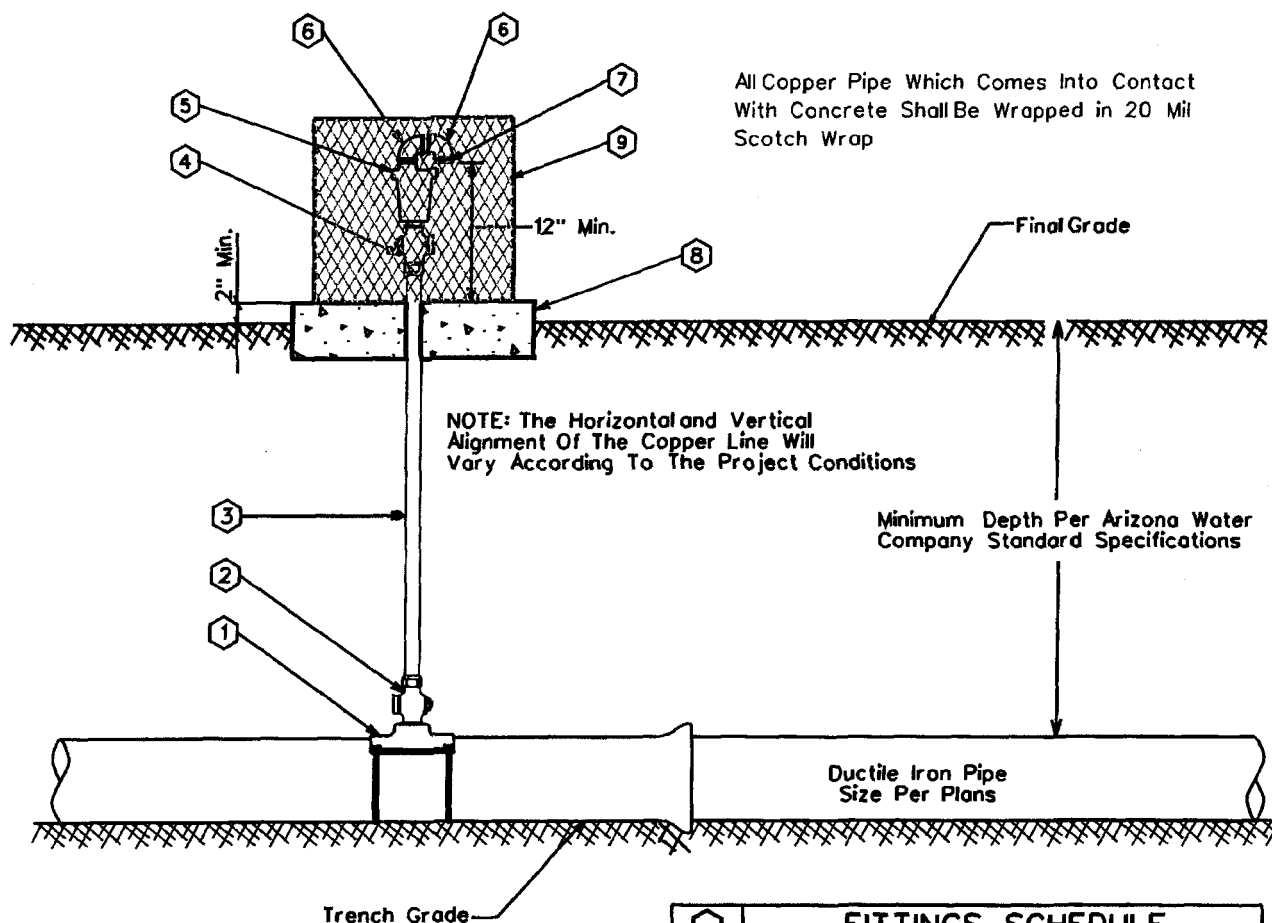
DRAWN BY: CB

APPROVED BY: MW

DATE: 03.20.1986

△ 03.21.2006

E-9-8-1



GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{3}{4}$ " orifice with valve seating faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

○	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	$\frac{1}{2}$ " Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrosible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guardshack, Model GS-1, Available From BPD1, Inc. Available In Leaf Green Or Desert Tan

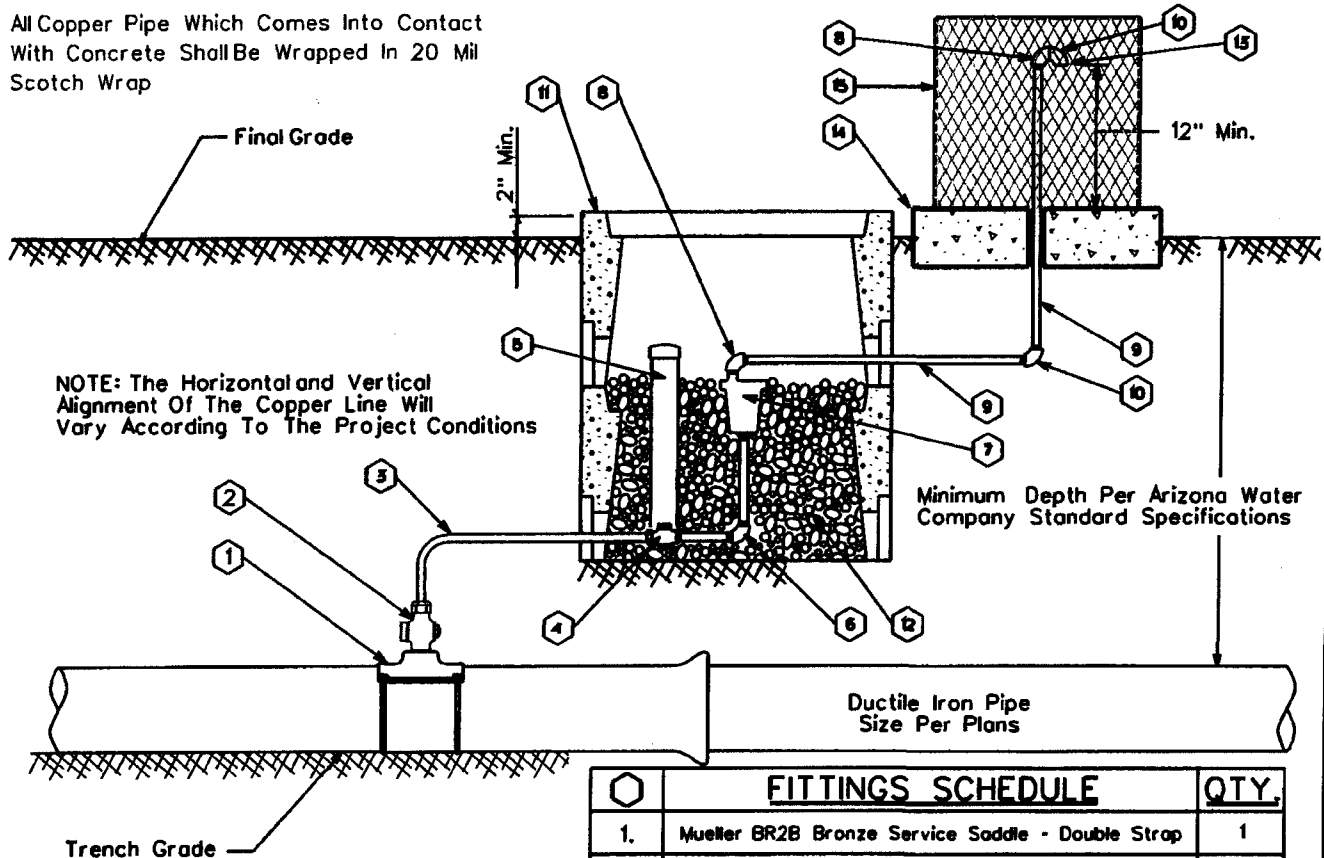
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 08.24.2006 E-9-8-2

All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped In 20 Mil Scotch Wrap



GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{3}{8}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

○	FITTINGS SCHEDULE	QTY.
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-2500B Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-2502B IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cap (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	$\frac{1}{2}$ " Brass Street Elbow	2
9.	$\frac{1}{2}$ " Galvanized Pipe - Length as req'd	2
10.	$\frac{1}{2}$ " Galvanized 90° Ell	2
11.	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrodible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshock, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan	1

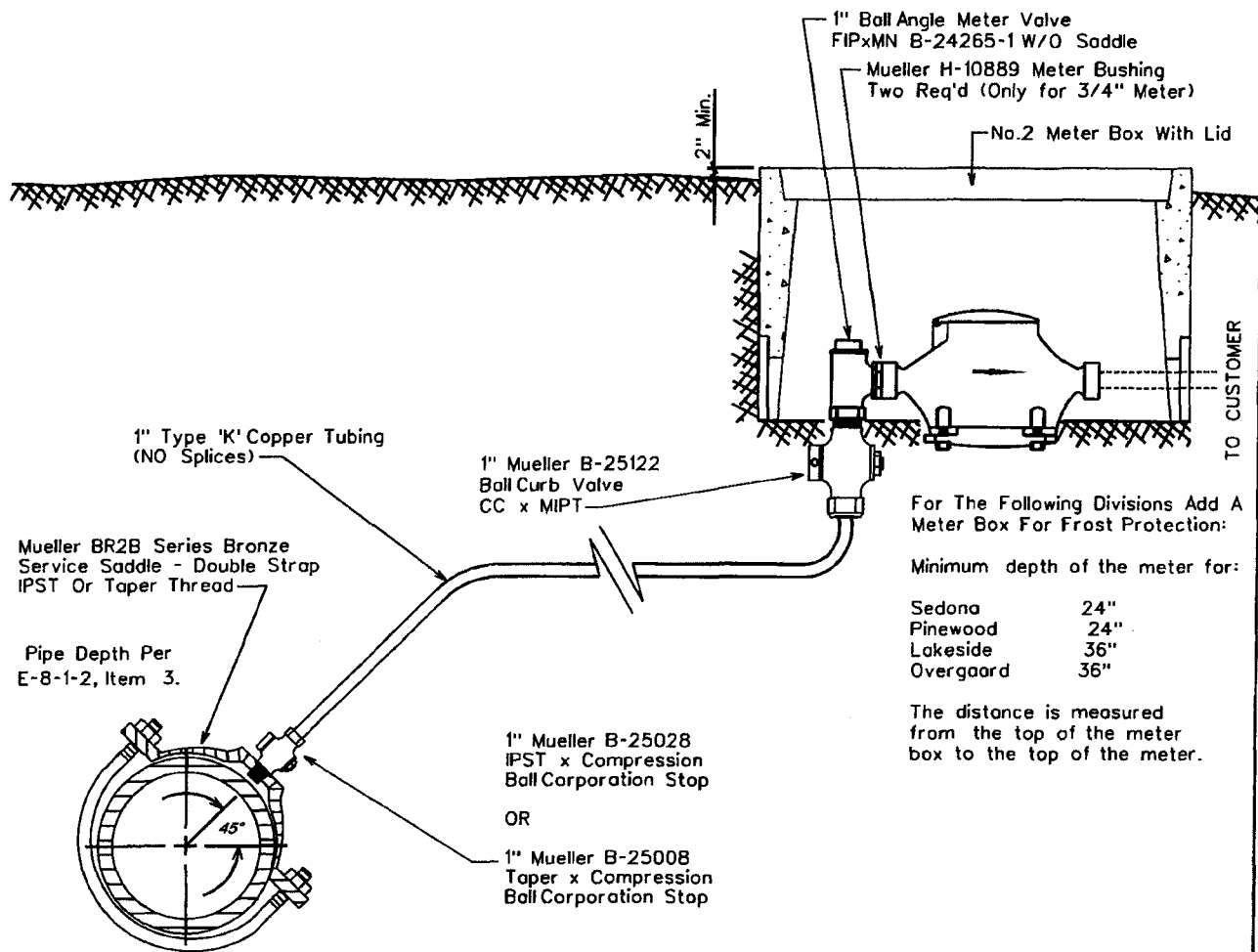
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 08.24.2006 E-9-8-3



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
taps on mains other than ductile iron is 12"

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

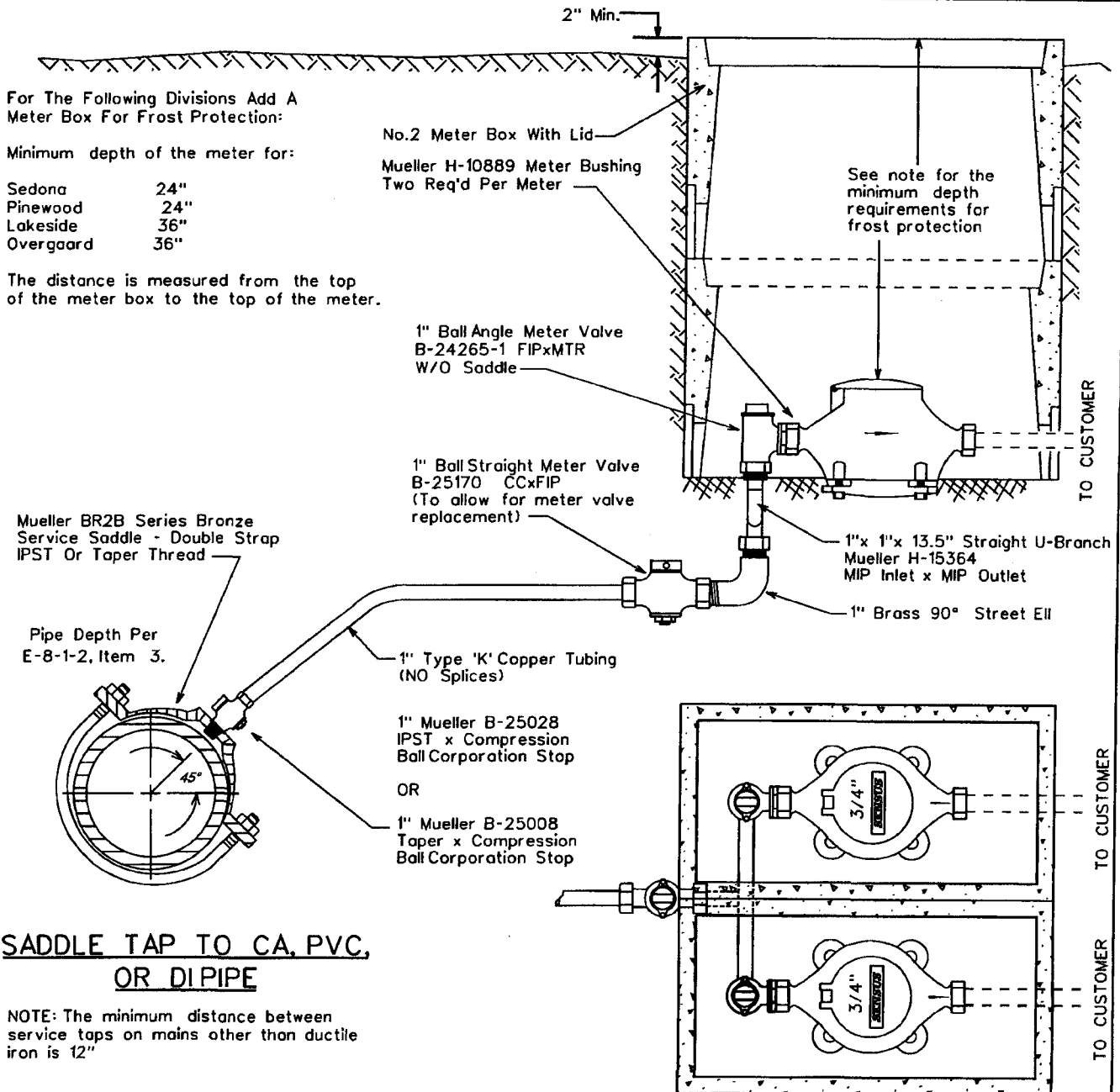
DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3/20/86	△ 03.17.2006	E-9-9-1
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For The Following Divisions Add A
Meter Box For Frost Protection:

Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top of
the meter box to the top of the meter.



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

DOUBLE SERVICE CONNECTION FOR 3/4" METERS

DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3-20-86	△ 08.25.2006	E-9-10-1
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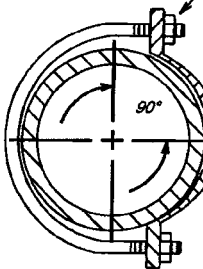
For The Following Divisions Add A
Meter Box For Frost Protection:

Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top
of the meter box to the top of the meter.

Mueller BR2B Series Bronze
Service Saddle - Double Strap
IPST Or Taper Thread



Pipe Depth Per
E-8-1-2, Item 3.

2" Type 'K' Copper Tubing
(NO Splices)

2" Mueller B-25028
IPST x Compression
Ball Corporation Stop

OR

2" Mueller B-25008
Taper x Compression
Ball Corporation Stop

SADDLE TAP TO CA. PVC, OR DI PIPE

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

No.2 Meter Box With Lid

1" Ball Angle Meter Valve
B-24265-1 FIPxMTR
W/O Saddle

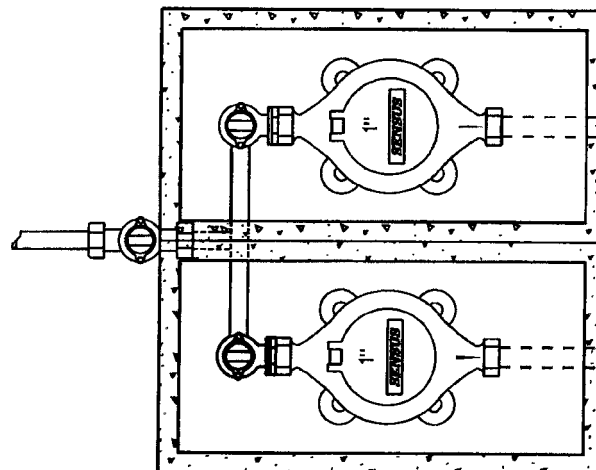
2" Mueller Ball Curb Valve
B-25172 CCxFIP
(To allow for meter valve
replacement)

See note for the
minimum depth
requirements for
frost protection

1"x 1"x 13.5" Straight U-Branch
Mueller H-15364
MIP Inlet x MIP Outlet

1" Brass 90° Street Ell

Mueller 47164
Brass Bushing
2" MIP x 1" FIP



NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

DOUBLE SERVICE CONNECTION FOR 1" METERS

DRAWN BY:

CB

APPROVED BY:

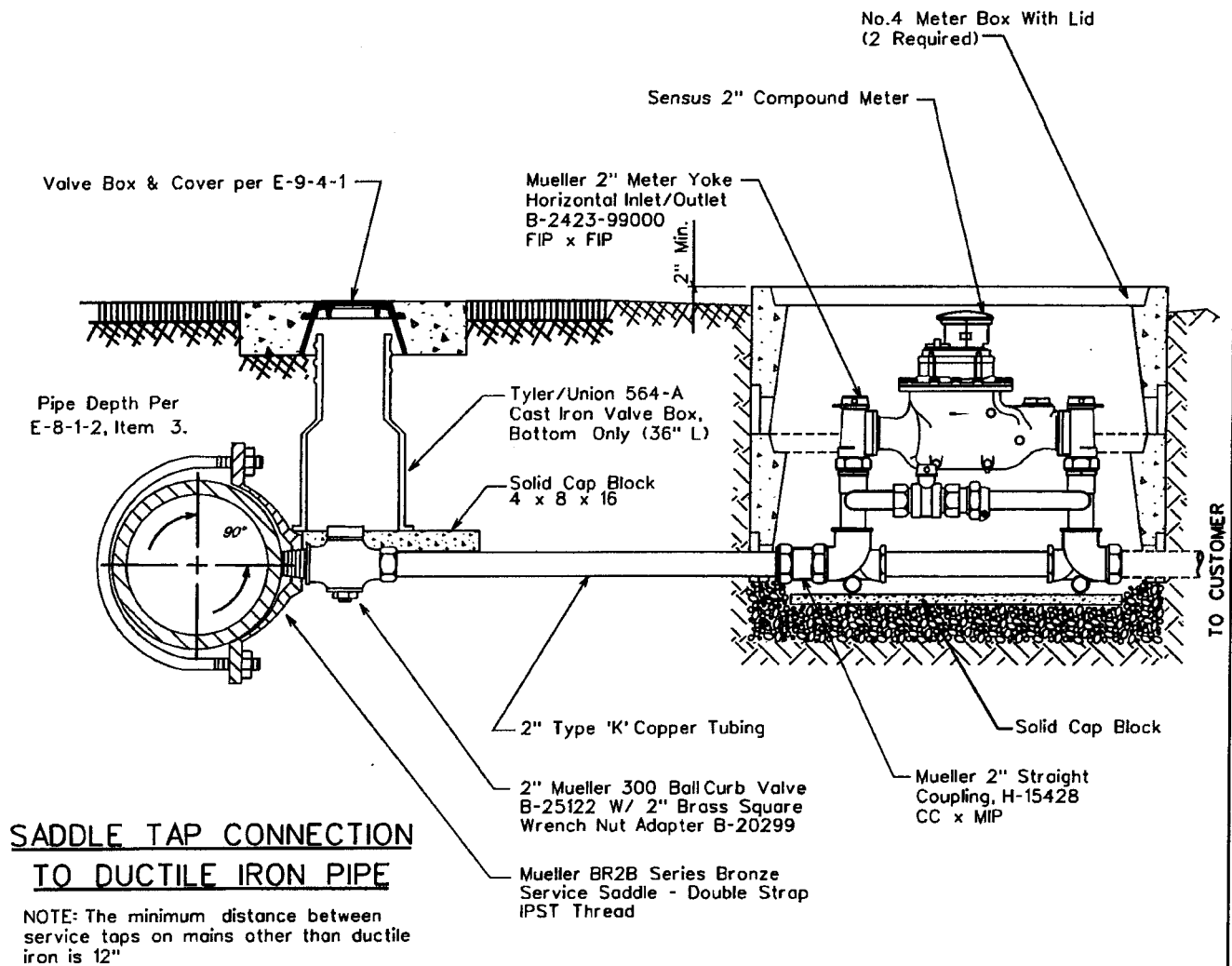
M.W.

DATE:

03.17.2006

△ 08.29.2006

E-9-10-2



NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET

NOTE:

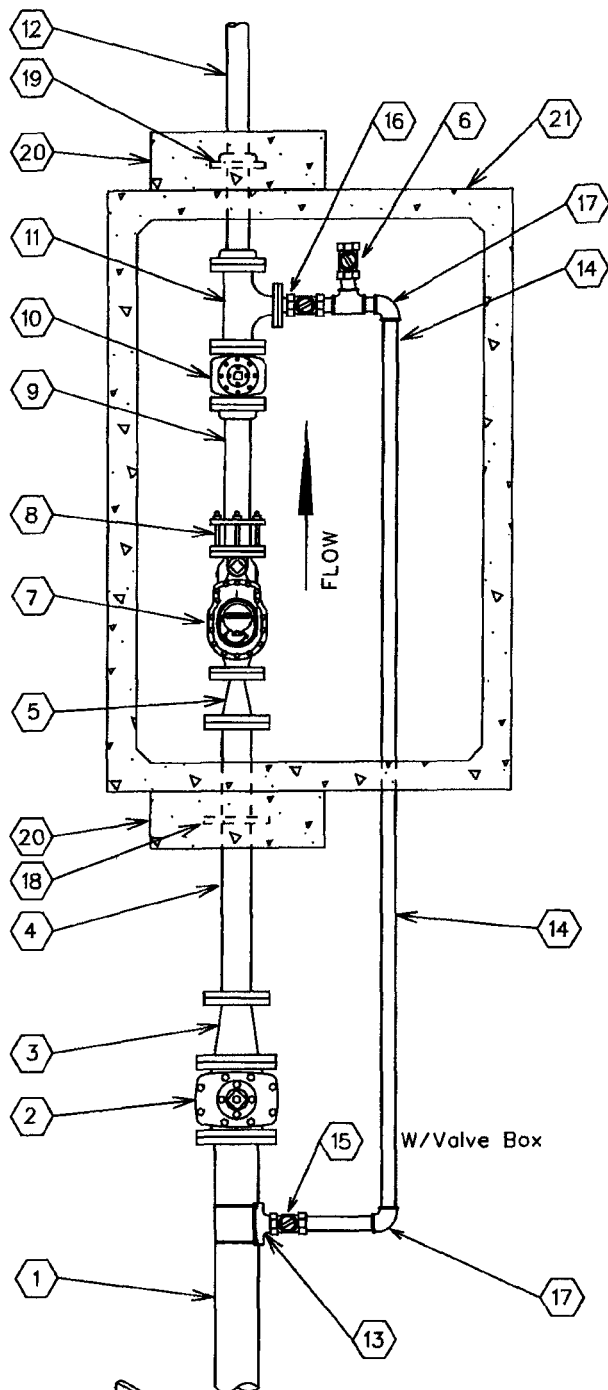
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

DRAWN BY: JW	APPROVED BY: M.W.	DATE: 3/20/86	△ 08.29.2006	E-9-11-1
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	4" x 3" Reducer flng
6.	2" Test Port
7.	3" Compound Meter
8.	3" F.C.A.
9.	3"x2'-0" D.I. Spool flng x pe
10.	3" Gate Valve flng
11.	3"x2" Flg Tee w/ 2" Companion Flange
12.	3"x4'-0" D.I. Spool flng x pe
13.	6"x2" Tapping Saddle
14.	2" Copper Pipe
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	2" Locking Ball Valve (normally closed)
17.	2" Mueller H-15526 90° Ell CC x CC
18.	4" Megalug
19.	3" Slip-On Welding Flange
20.	24"x24"x8" Conc. Thrust Block P.I.P.
21.	575-LA Conc. Vault

NOTE:

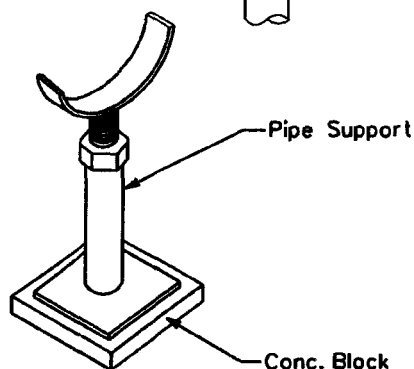
1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

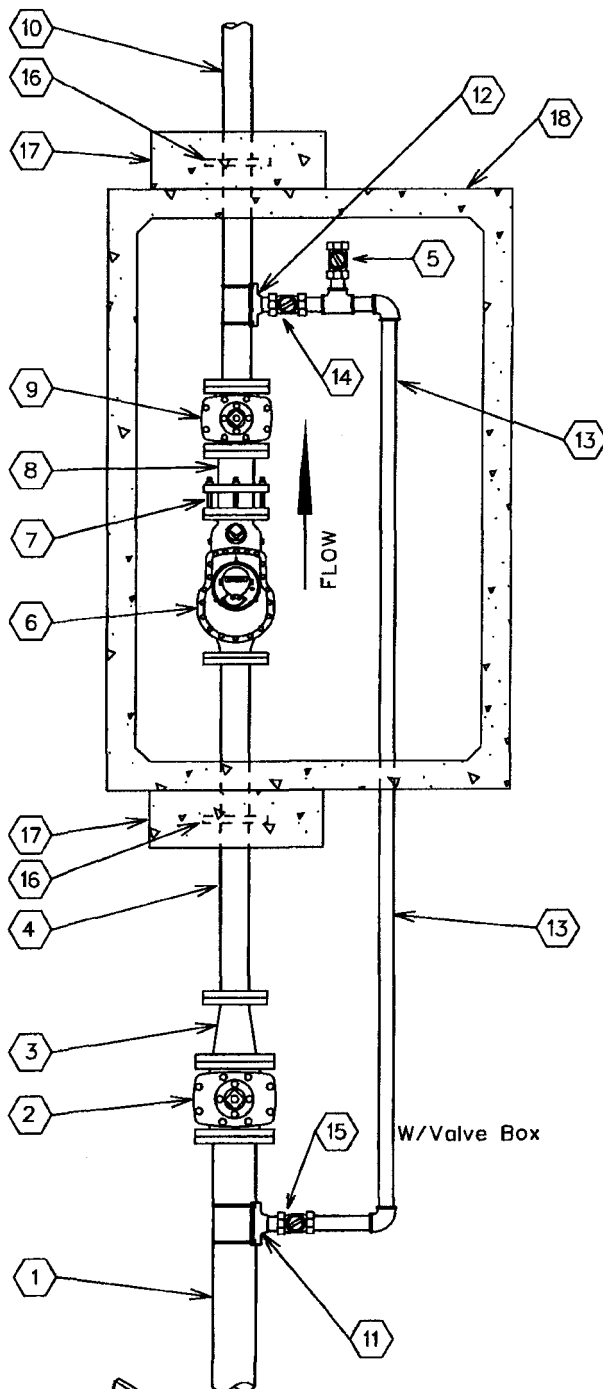
ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

3" COMPOUND METER

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-1
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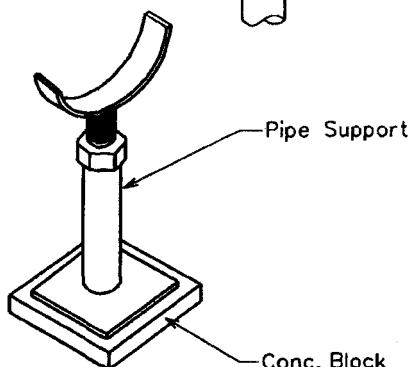




No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve flng
10.	4"x4'-0" D.I.P. Spool flng x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).



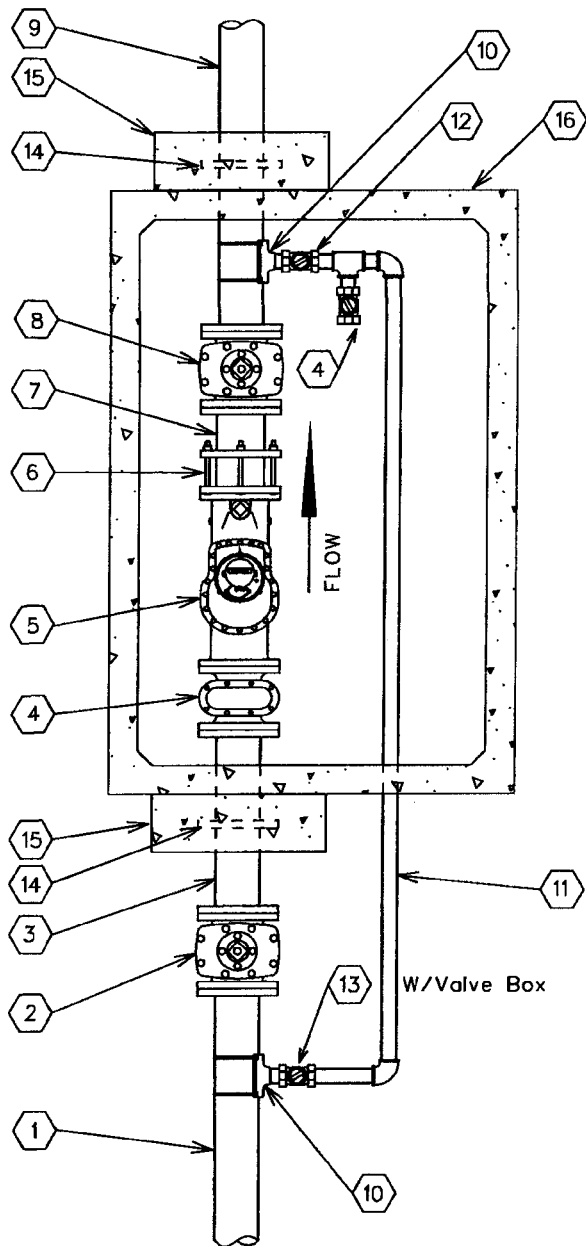
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER

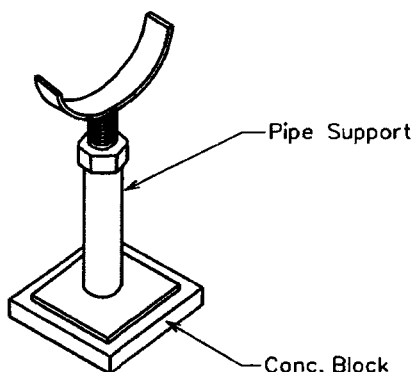
DRAWN BY:	APPROVED BY:	DATE:		
CCO	MW	10/5/1993	△08.29.2006	E-9-12-2



No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x 3'-0" D.I.P. Spool flng x pe
4.	2" Test Port
5.	6" Compound Meter
6.	6" F.C.A.
7.	6"x 1'-0" D.I.P. Spool flng x pe
8.	6" Gate Valve flng
9.	6"x 4'-0" D.I.P. Spool flng x pe
10.	6"x2" Tapping Saddle
11.	2" Copper Pipe
12.	2" Ball Valve / Locking (Normally Closed)
13.	2" Mueller B25122 Ball Valve w/B20299 Nut
14.	6" Megalug
15.	24"x24"x8" Conc. Thrust Block P.I.P.
16.	575-LA Conc. Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

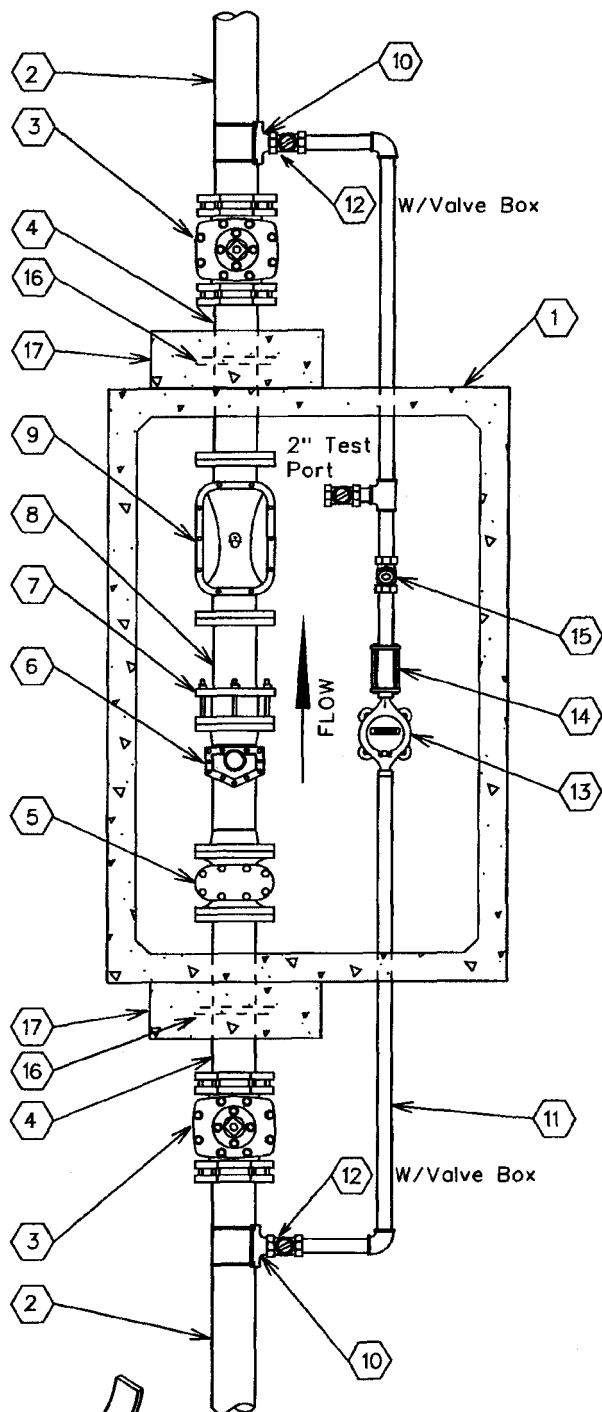


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

6" COMPOUND METER

DRAWN BY:	APPROVED BY:	DATE:		
CCO	MW	10/5/1993	△08.29.2006	E-9-12-3



No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. Spool Piece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe (TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x=N" Tapping Saddle
11.	=N" Copper Pipe
12.	=N" Ball Valve (Locking)
13.	=N" Meter
14.	=N" Coup. Adapt.
15.	=N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

=N - Size To Be determined By A.W.Co.

NOTE:

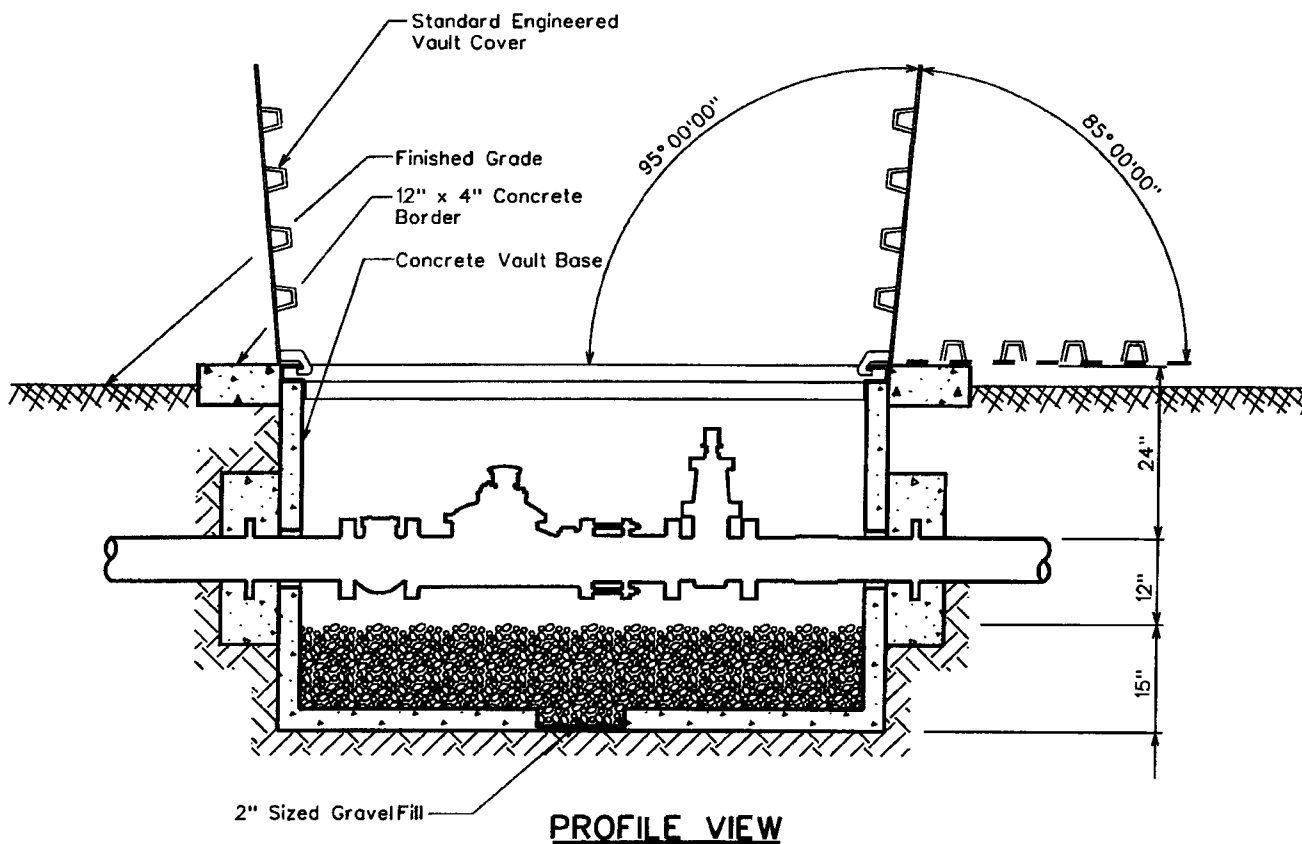
1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

6" COMPOUND SERVICE

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/05/1993	△08.29.2006	E-9-12-4
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CONCRETE VAULT & COVER SPECIFICATIONS

Vault - Base No. 575-BL
 Cover - Standard Engineered Vault Cover
 . 4874 Aluminum Diamond Plate Cover
 For Non-Traffic Loading Areas
 Or
 . 4874 Galvanized Steel Diamond Plate
 Cover W/ H-20 Traffic Loading
 . Double Torsion Spring Assisted Doors W/
 Recessed Hasp & Safety Latches

NOTES

1. Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
2. Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
 FOR THE INSTALLATION OF

CONCRETE VAULT

DRAWN BY:

CCO

APPROVED BY:

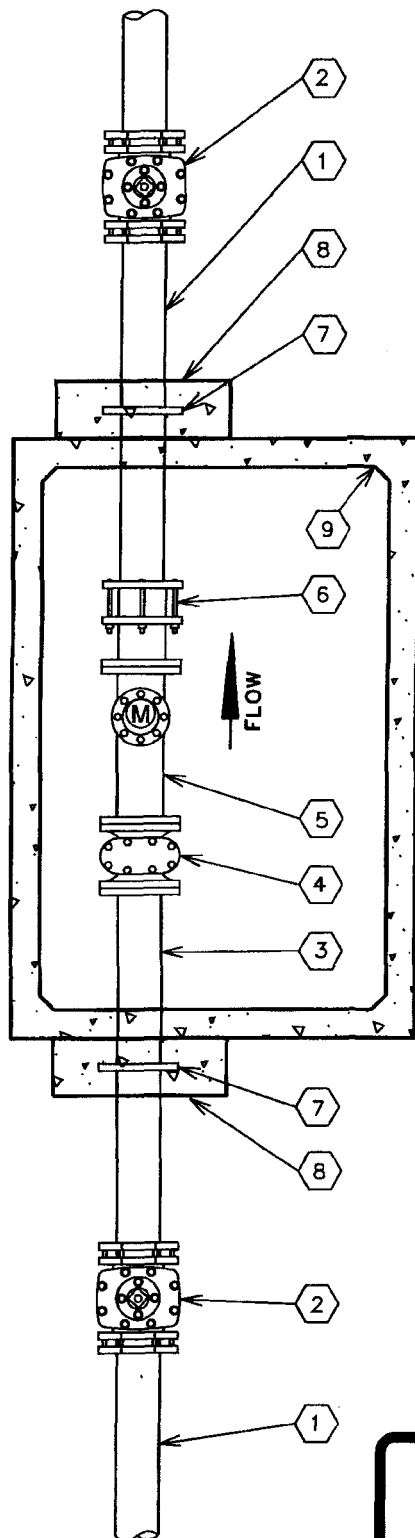
MW

DATE:

10/5/1993

△ 05.17.2001

E-9-12-5



No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
2. Pipe support locations to be determined by field personnel.
3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings to are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

NON-POTABLE PROPELLER METER

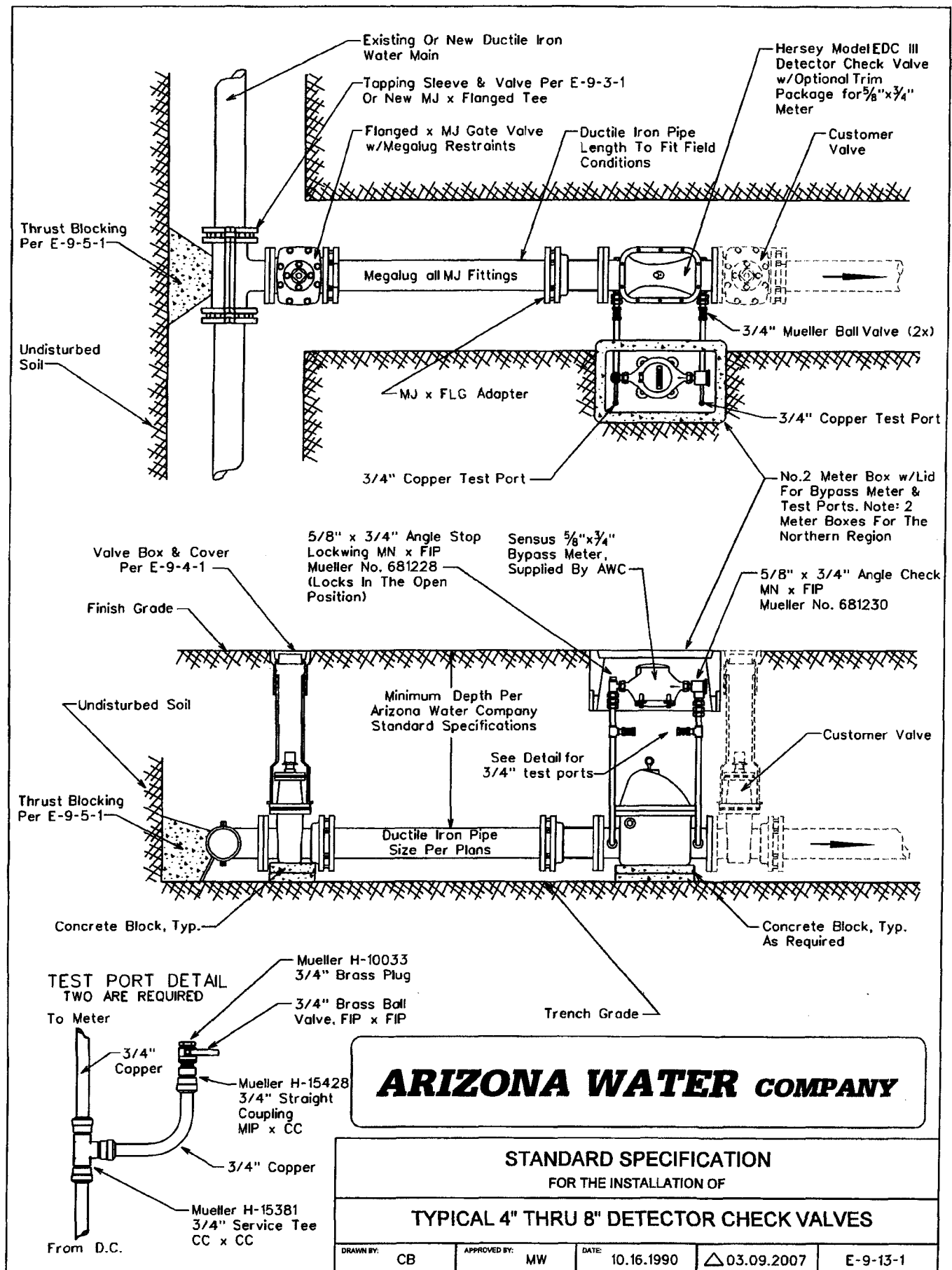
DRAWN BY: JPK

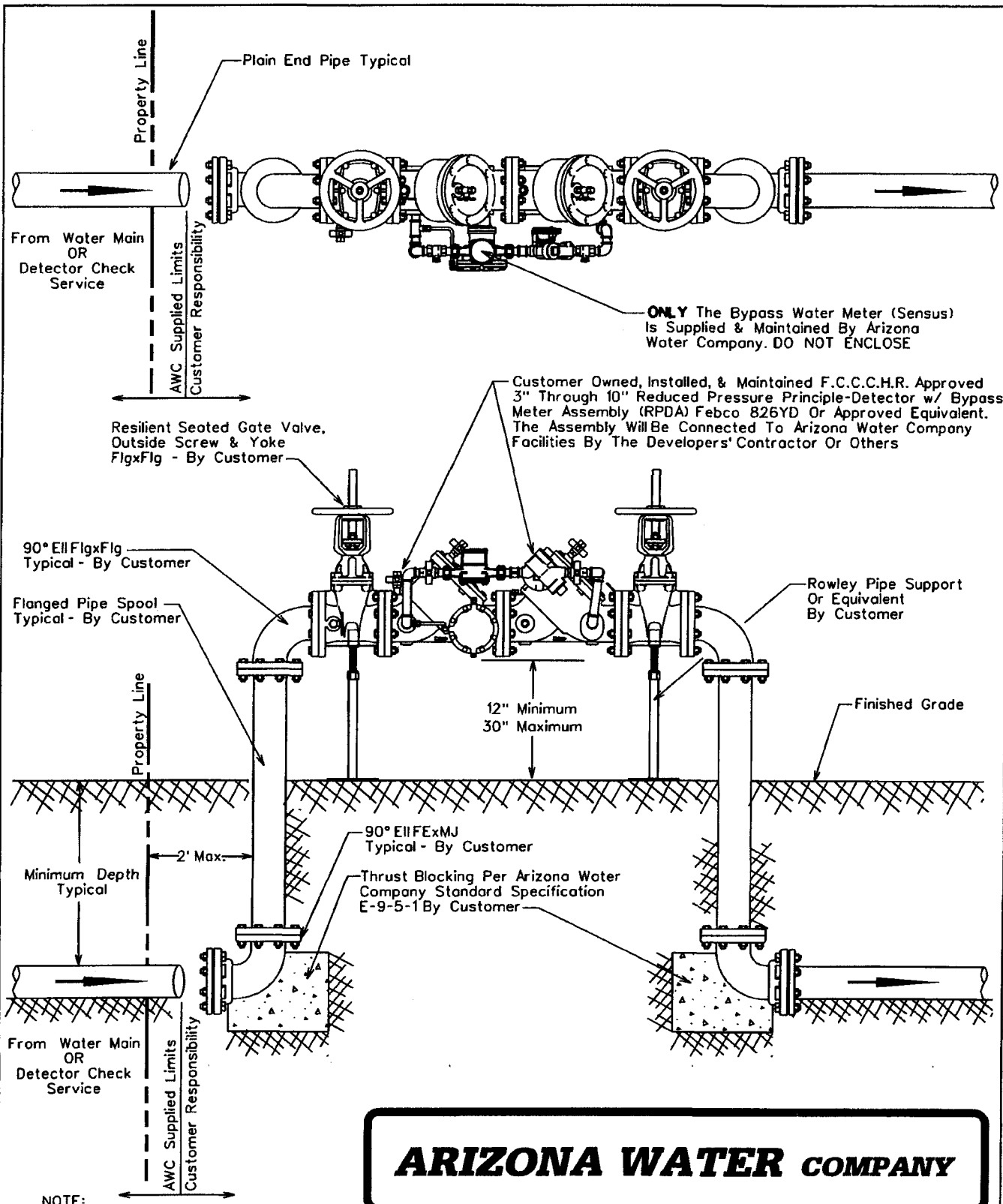
APPROVED BY: MW

DATE: 7-20-95



E-9-12-6





STANDARD SPECIFICATION

FOR THE INSTALLATION OF

3" THRU 10" REDUCED PRESSURE PRINCIPLE-DETECTOR WITH BYPASS METER ASSEMBLY (RPDA) FOR FIRELINE SERVICES

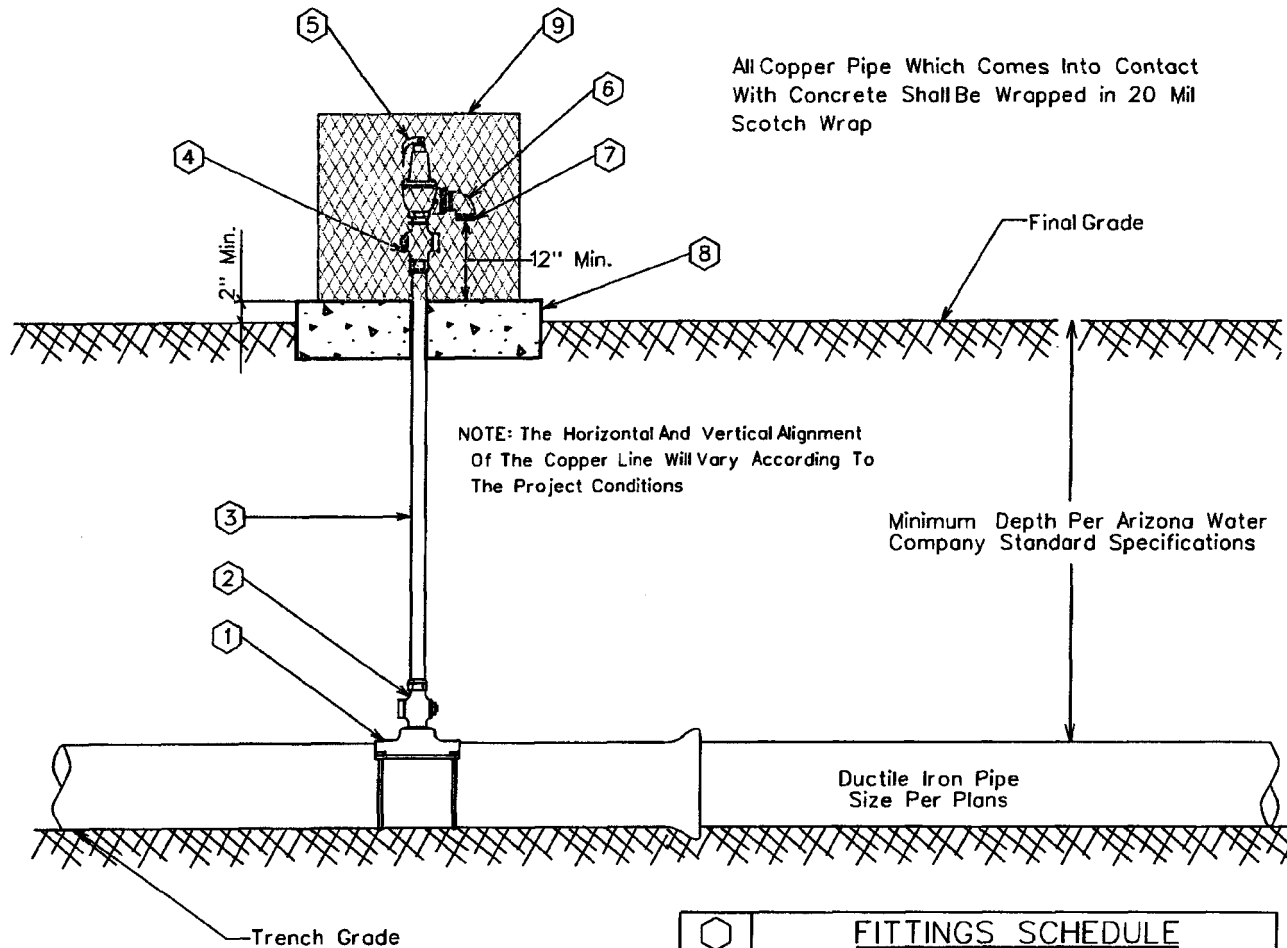
DRAWN BY: CB

APPROVED BY: MW

DATE: 10-13-98

△ 1-19-2000

E-9-13-2



NOTE:

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corrosible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO

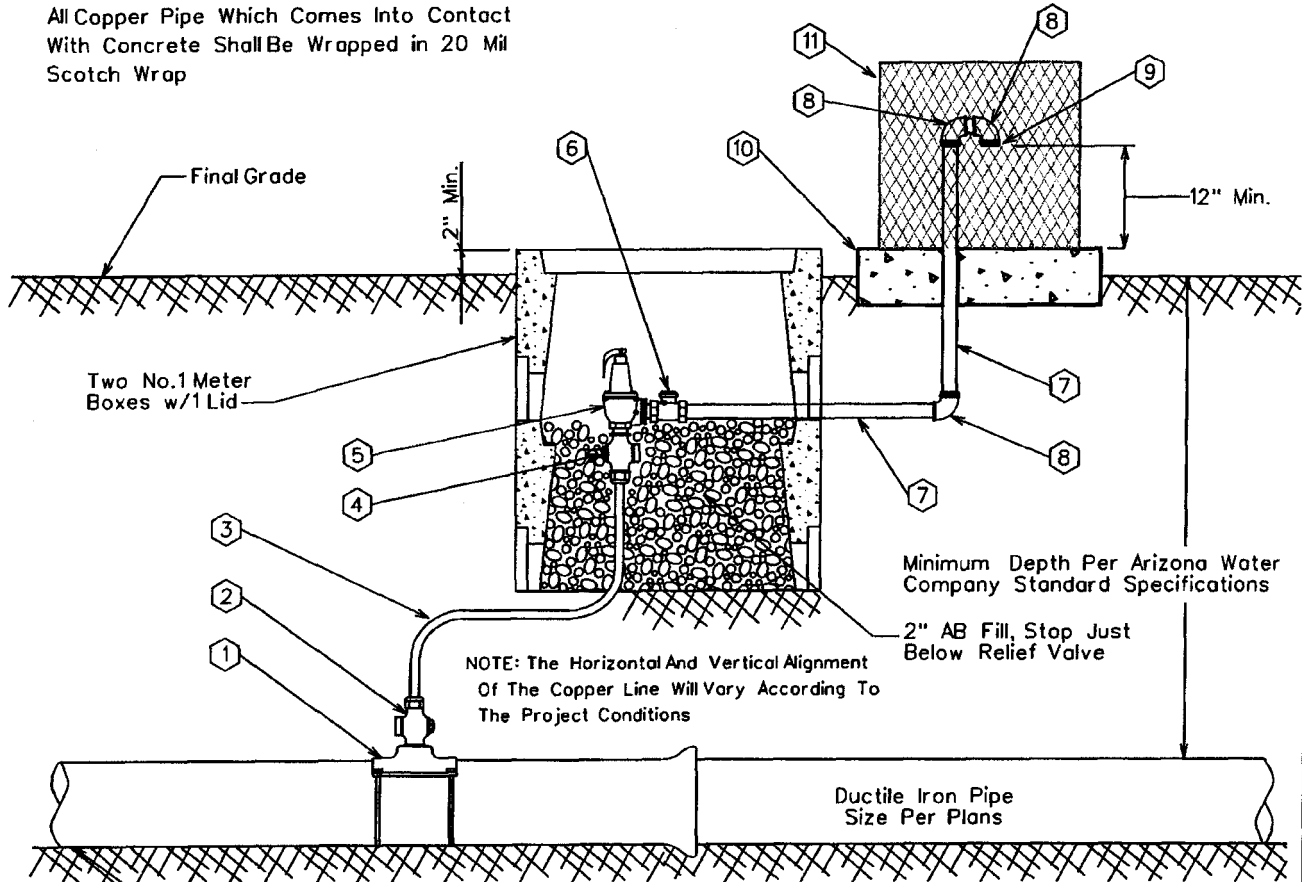
APPROVED BY: MW

DATE: 3/20/1986

△ 08.29.2006

E-9-14-1

All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped in 20 Mil Scotch Wrap



NOTE: Trench Grade

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

NOTE: The Horizontal And Vertical Alignment Of The Copper Line Will Vary According To The Project Conditions

Minimum Depth Per Arizona Water Company Standard Specifications

2" AB Fill, Stop Just Below Relief Valve

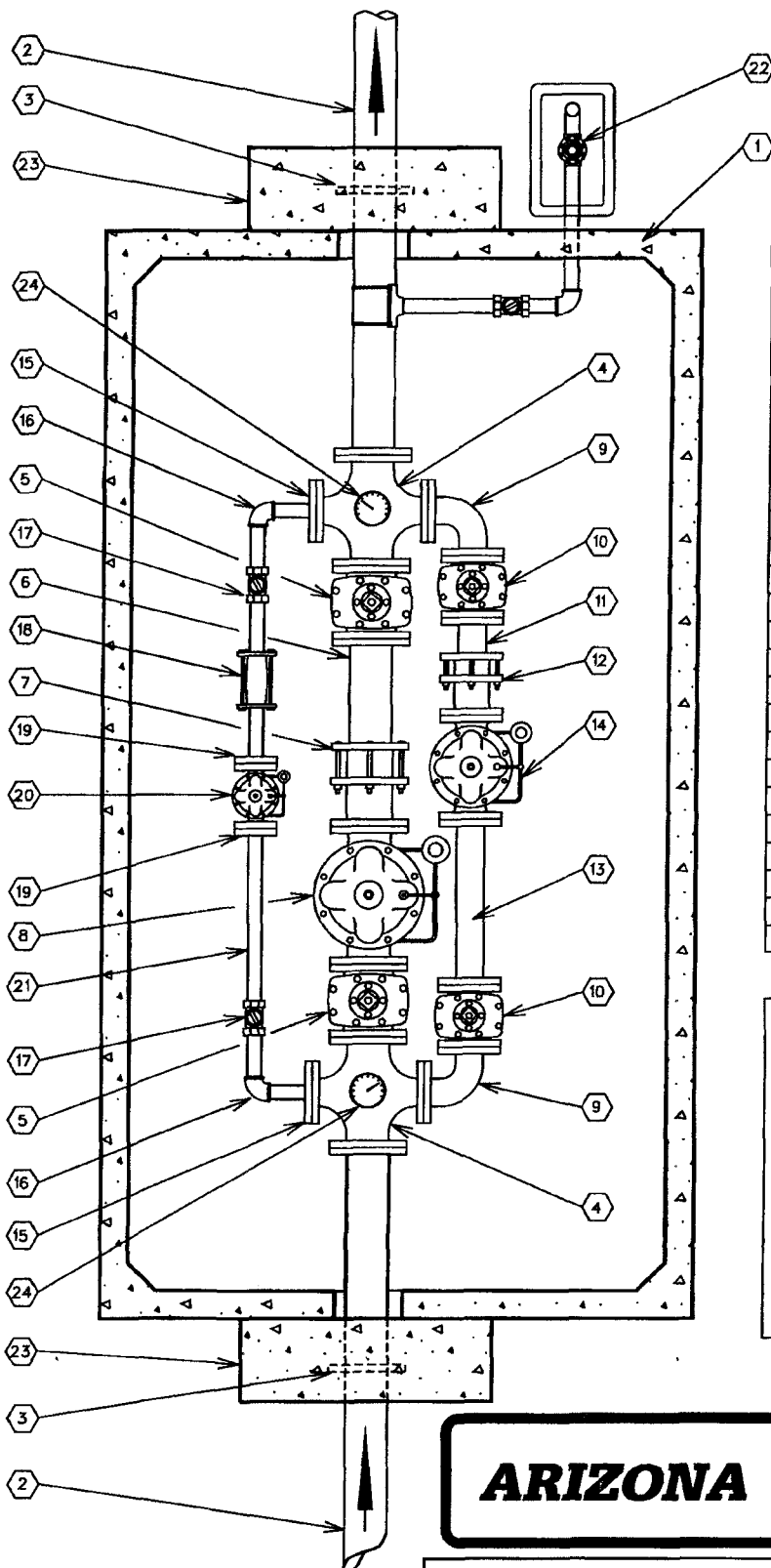
⬡	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-2500B Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-2502B IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psiW/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corrosible)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPDt, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO	APPROVED BY: MW	DATE: 3/20/1986	△08.29.2006	E-9-14-2
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No.	FITTINGS SCHEDULE
1.	612 LA Conc. Vault (See Note 3)
2.	6"x6'-0" D.I.P. Spool Fig.xP.E.
3.	6" Megalug (Thrust Anchor)
4.	6"x4" Cross Fig.
5.	6" Gate Valve Fig.
6.	6"x2'-0" D.I.P. Spool Fig.xP.E.
7.	6" Fig. Coup. Adapt. (Rockwell 913)
8.	6" High Flow Pressure Reducing Valve Fig.
9.	4" 90° Ell. Fig.
10.	4" Gate Valve Fig.
11.	4"x1'-0" D.I.P. Spool Fig.xP.E.
12.	4" Fig. Coup. Adapt. (Rockwell 913)
13.	4"x2'-0" D.I.P. Spool Fig.
14.	4" Medium Flow Pressure Reducing Valve Fig.
15.	2"x9" O.D. Reducing Fig. (I.P.T.)
16.	2" 90° Ell. F.I.P.
17.	2" Ball Valve F.I.P.
18.	2" Comp. Coup. (Rockwell 411)
19.	2" Companion Fig. (I.P.T.)
20.	2" Low Flow Pressure Reducing Valve Fig.
21.	2" Sched. 40 Std. Pipe
22.	2" Pressure Relief Valve (See E-9-14-1)
23.	12"x36"x36" Conc. Thrust Block P.I.P.
24.	Pressure Gauge w/shut off valve

NOTE:

1. Use Rowley pipe supports or equivalent as needed. (See E-9-12-4)
2. Pipe support locations to be determined by field personnel.
3. Vault-612 LA top section w/12" Dia. sump hole. Cover-concrete slab top w/(4) 4'-0" x2'-6" aluminum spring loaded hinged style covers for non-traffic loading areas. For areas w/low density traffic, cover is to be designed for H-20 traffic loading.
4. All Sched. 40 Std. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PRESSURE REDUCING STATION

DRAWN BY:

JPK

APPROVED BY:

MW

DATE:

11-16-88

△ 9-27-95

E-9-15-1

1. Specific Items To Be Painted Deer-O Pure White Enamel:

- A. All Booster Pumps.
- B. All Electrical Motors And Gas Engines.
- C. Well Pump Discharge Heads.
- D. Electrical Panel.

2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:

- A. Well Shelter.

3. Specific Items To Be Painted OSHA Orange:

- A. Electrical Conduit.

4. All Other Items To Be Painted With Either:
(At Manager's Discretion)

- A. Cholla Green
- B. Forest Green
- C. Sonora Beige
- D. Red Rock
- E. Rock Brown
- F. Deer-O Pure White
- G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PAINT COLOR SELECTION

DRAWN BY:

CCO

APPROVED BY:

DATE:

3/20/1986

△ 2/13/2001

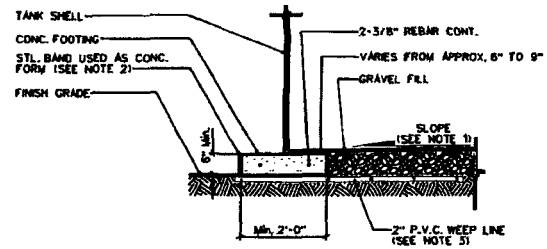
E-9-16-1

1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
2. $\frac{1}{4}$ " minimum shell plate.
3. Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the dollar plate.
4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above weir box high water level.
5. Storage tank shall be placed upon adequately compacted base material.
6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
7. Tank and related fittings shall be enclosed with a 6 foot chain link fence with lockable gates and anti-personnel wire on top of fence.
8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.
9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlap the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and bolted in place. Tanks larger than a 60 foot diameter require 2 shellmanholes.
10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ " of shell with 10 gauge sheet steel.
11. Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
12. The following information will be included with application for approval to construct:
 1. Tank location _____
 2. Tank height _____
 3. Tank diameter _____
 4. Tank capacity _____
 5. Method of water level control _____
13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
14. The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61.

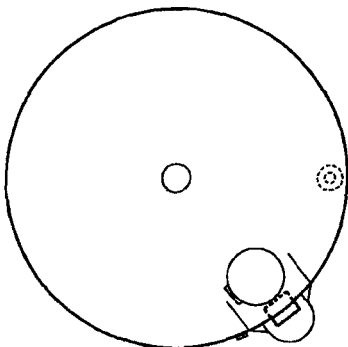
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

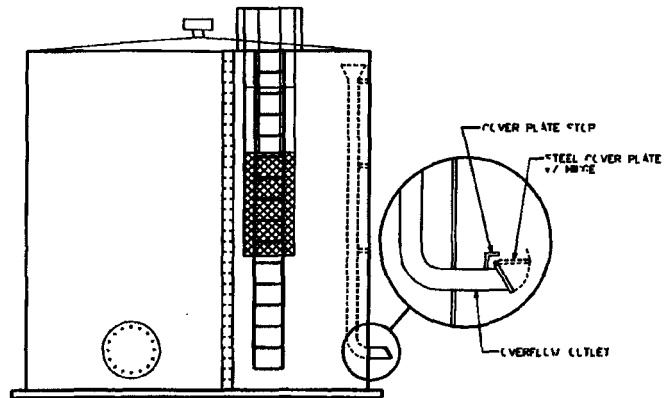
1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN $\frac{1}{8}$ ".
3. INSTALL 8-2" DIA. 10'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45°), PERFORATE 8'-0" OF LINE WITH $\frac{1}{2}$ " DIA HOLES @ 6" O.C. PLUG INTERIOR END OF LINE w/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



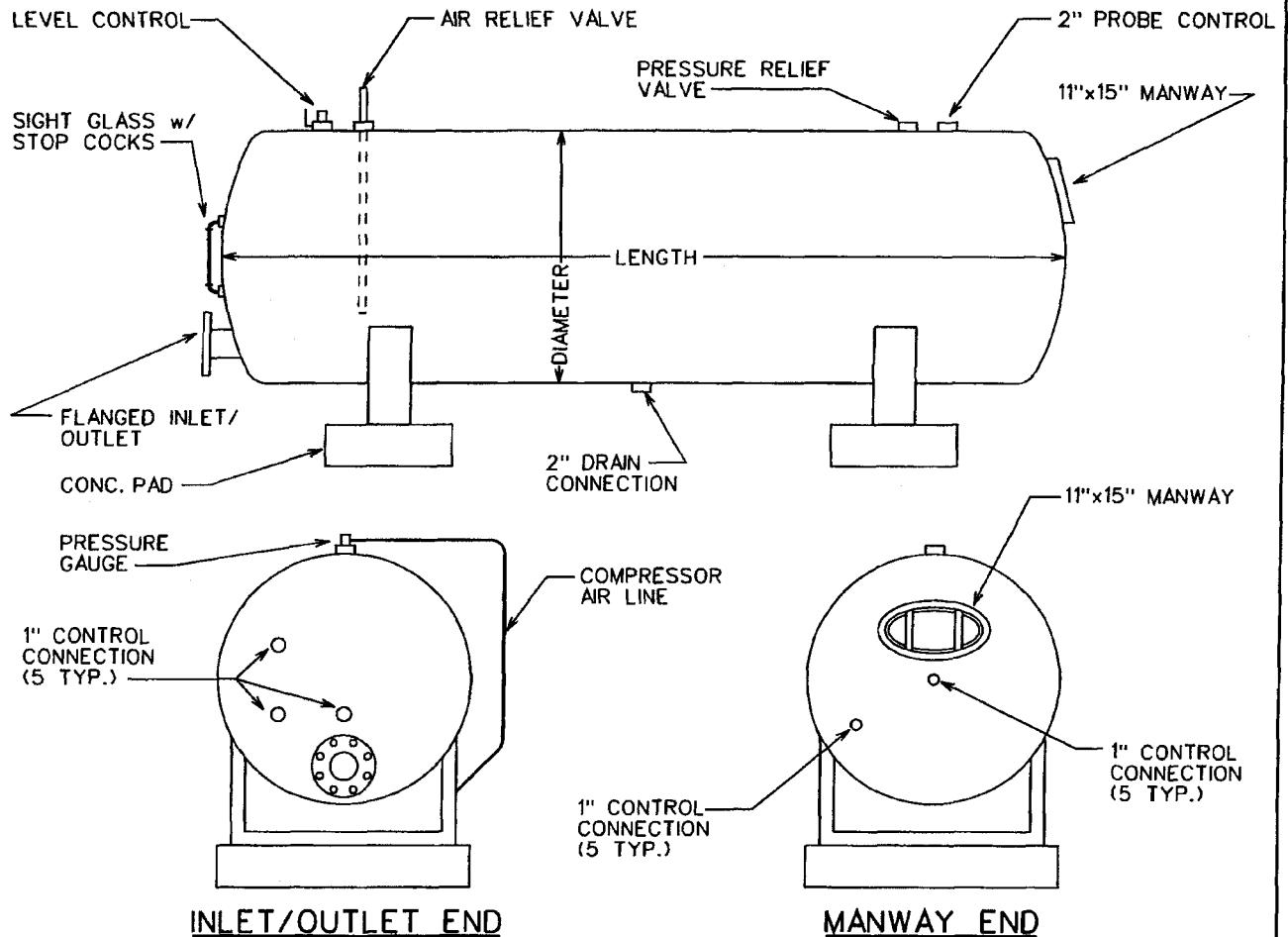
PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

DRAWN BY: JPK	APPROVED BY: MJW	DATE: 10-17-88	2-12-96	E-9-17-1
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1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
 1. Tank Location _____
 2. Tank Length _____
 3. Tank Diameter _____
 4. Tank Capacity _____
 5. Maximum Working Pressure _____

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

DRAWN BY: JPK	APPROVED BY: MW	DATE: 3-20-1986	△ 01.16.2007	E-9-18-1
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NOT
CONVERTED
TO
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WELL SHELTER

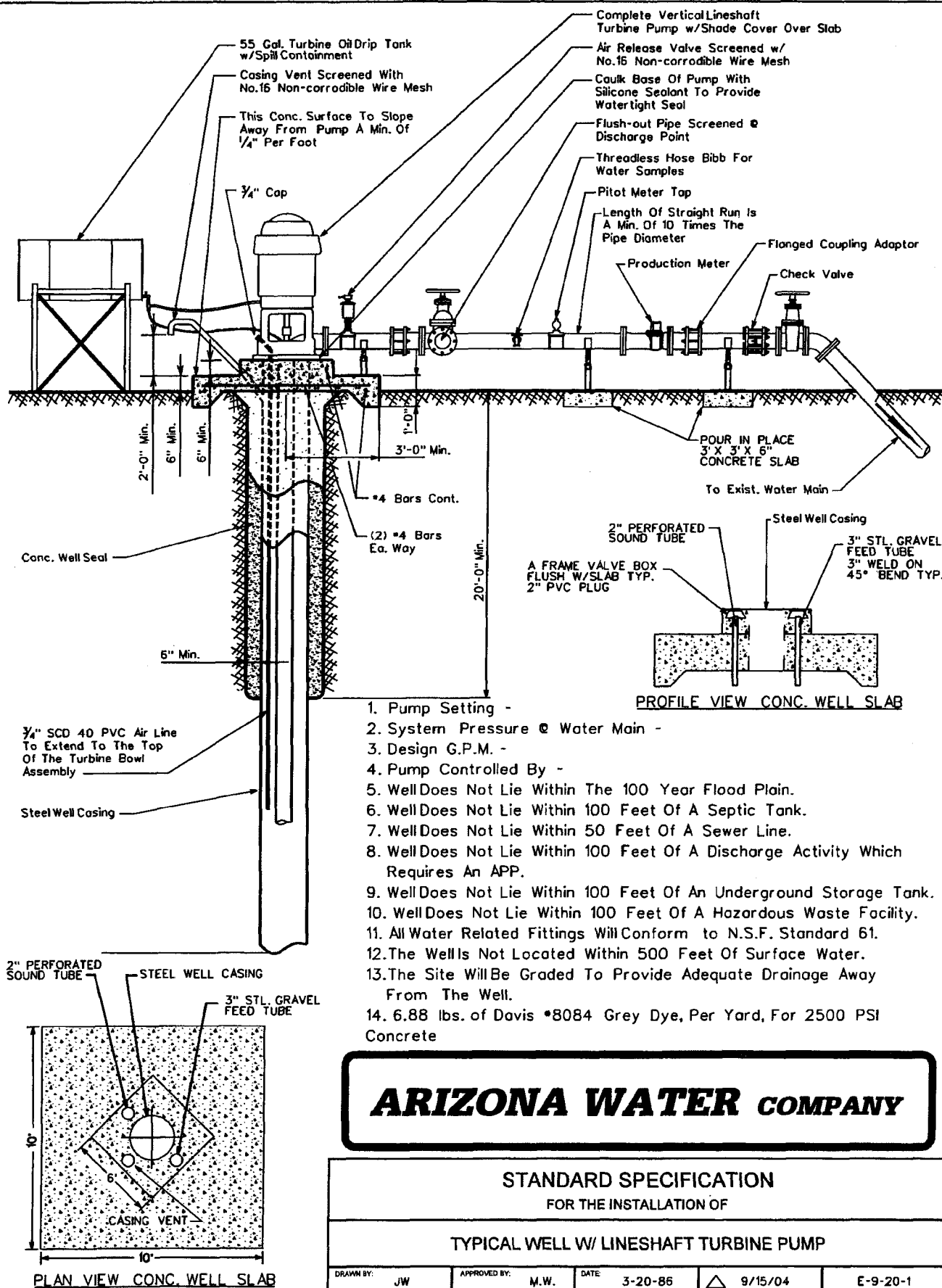
DRAWN BY: CB

APPROVED BY:

DATE: 03.20.1986

△ 04.03.2001

E-9-19-1

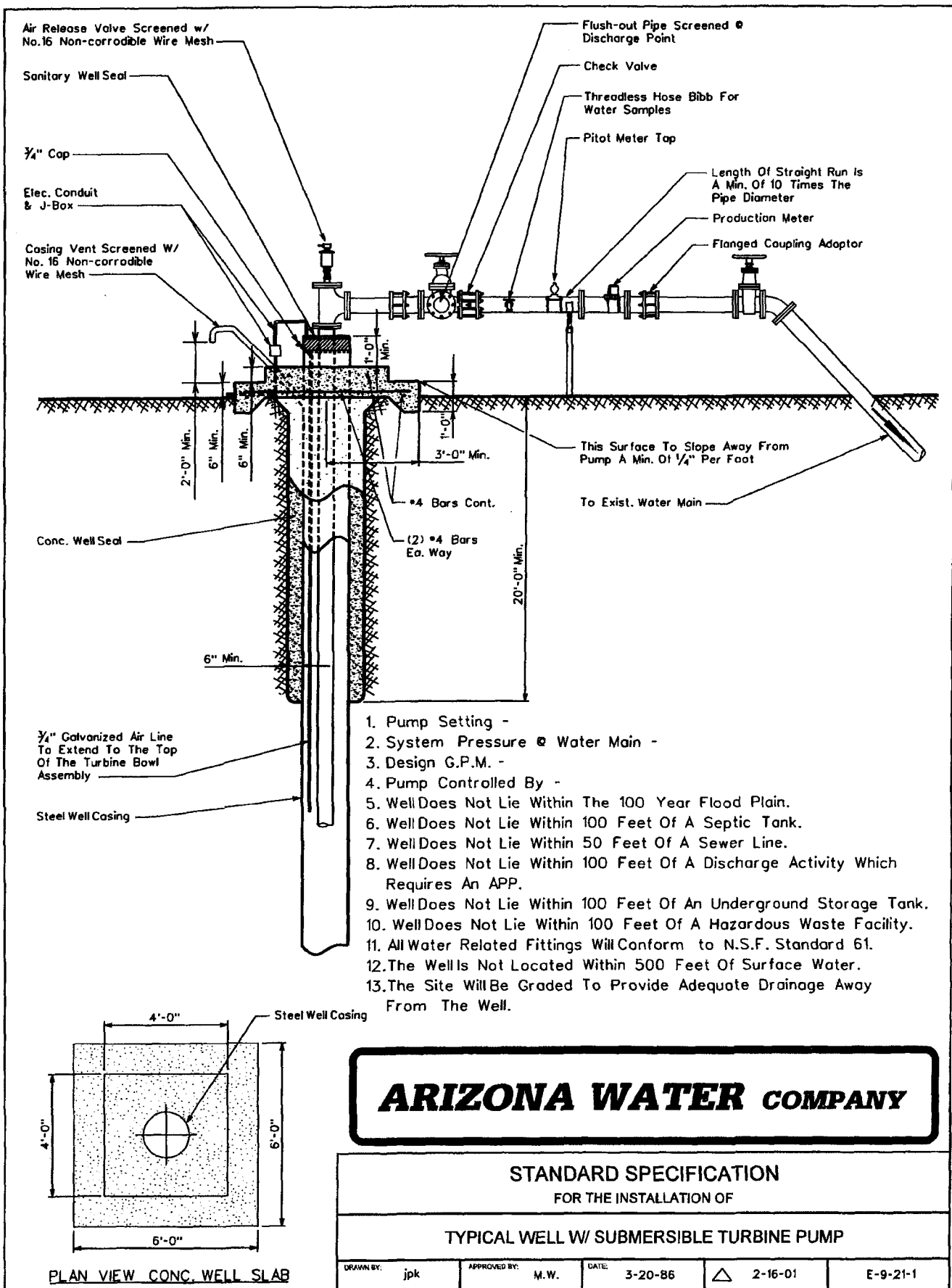


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL WELL W/ LINESHAFT TURBINE PUMP

DRAWN BY: JW	APPROVED BY: M.W.	DATE: 3-20-86	9/15/04	E-9-20-1
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All New Purchases To Conform To The Following:

Column Pipe

4" I.D. - 8	Threads Per Inch Tapered	3/4"	Per Foot Right Hand						
6" I.D. - 8	"	"	"	"	"	"	"	"	"
8" I.D. - 8	"	"	"	"	"	"	"	"	"
10" I.D. - 8	"	"	"	"	"	"	"	"	"
12" I.D. - 8	"	"	"	"	"	"	"	"	"
14" I.D. - 8	"	"	"	"	"	"	"	"	"

Oil Tube - Peerless Type

1 1/2"	O.D. - 14	Threads Per Inch Right Hand					
2"	O.D. - 12	"	"	"	"	"	"
2 1/2"	O.D. - 10	"	"	"	"	"	"
3"	O.D. - 10	"	"	"	"	"	"
3 1/2"	O.D. - 10	"	"	"	"	"	"
4"	O.D. - 10	"	"	"	"	"	"

Line Shaft

3/4"	O.D. - 10	Threads Per Inch Left Hand					
1"	O.D. - 14	"	"	"	"	"	"
1-3/16"	O.D. - 10	"	"	"	"	"	"
1-1/2"	O.D. - 10	"	"	"	"	"	"
1-11/16"	O.D. - 10	"	"	"	"	"	"
1-15/16"	O.D. - 10	"	"	"	"	"	"
2-3/16"	O.D. - 10	"	"	"	"	"	"
2-7/16"	O.D. - 8	"	"	"	"	"	"

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY:

CCO

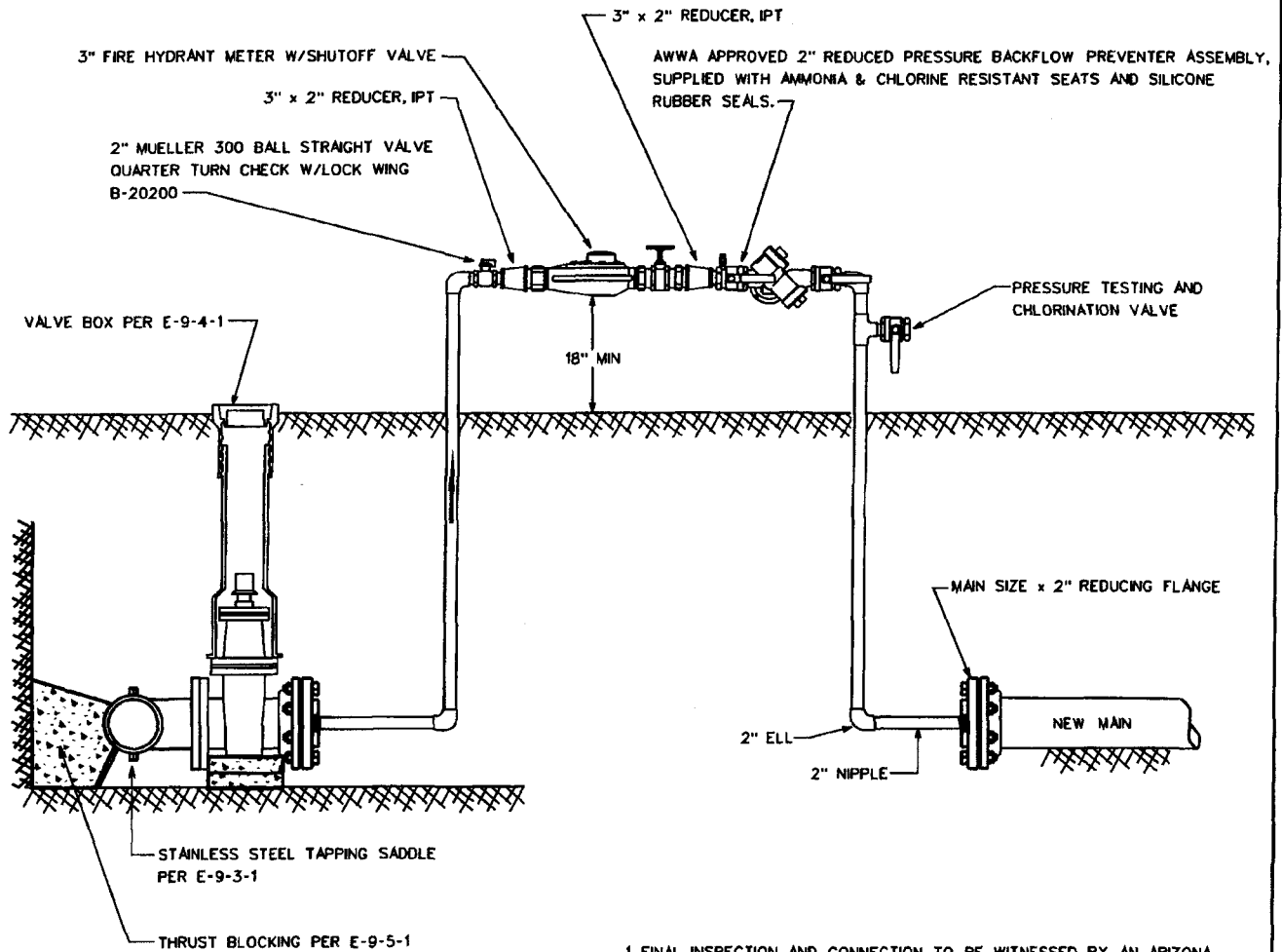
APPROVED BY:

DATE:

3/20/1996

△ 2/13/2001

E-9-22-1



1. FINAL INSPECTION AND CONNECTION TO BE WITNESSED BY AN ARIZONA WATER COMPANY REPRESENTATIVE.
2. REDUCING FLANGES TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP FOR TEMPORARY METER DOWNSTREAM OF THE REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

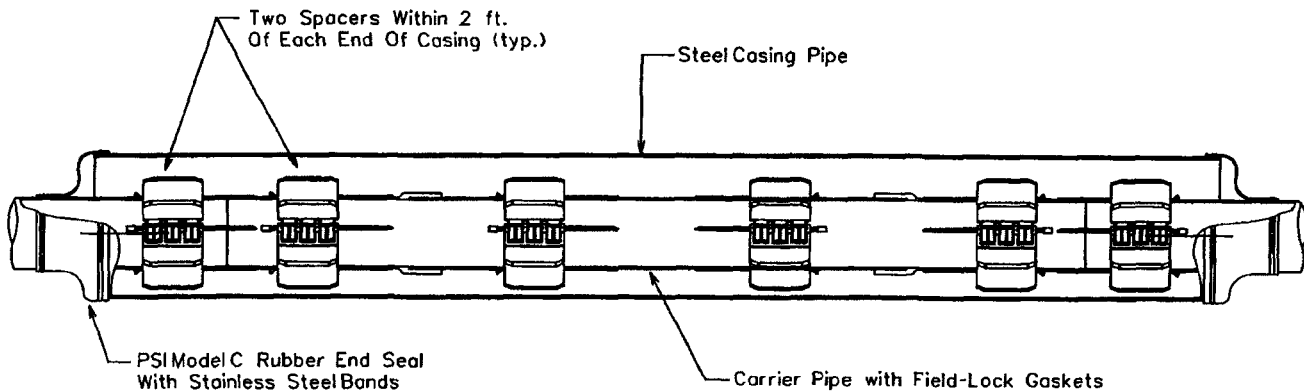
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

HOT TAP & JUMPER METER CONNECTION

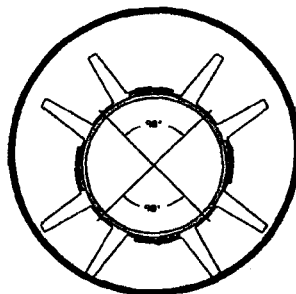
DRAWN BY: CB	APPROVED BY: MJW	DATE 05.14.2004	△
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E-9-23-1



C R O S S S E C T I O N

The casing spacers shall be the PSIRanger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



S E C T I O N C U T

End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seals as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

*Thickness Of Skid To Extend A Minimum of 1/2" Above The O.D. Of The Pipe Bell or Gland.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6"	16"	15.25"	STD.	.375	*x4x12
8"	18"	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	*x4x12
16"	28"	27.25"	STD.	.375	*x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	*x4x12
30"	48"	47.25"	STD.	.375	*x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: CB	APPROVED BY:	DATE: 3/20/1996	△ 09.27.2006
E-9-24-1			

ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Feeder, or its equivalent, and shall be supplied with all its components factory mounted.

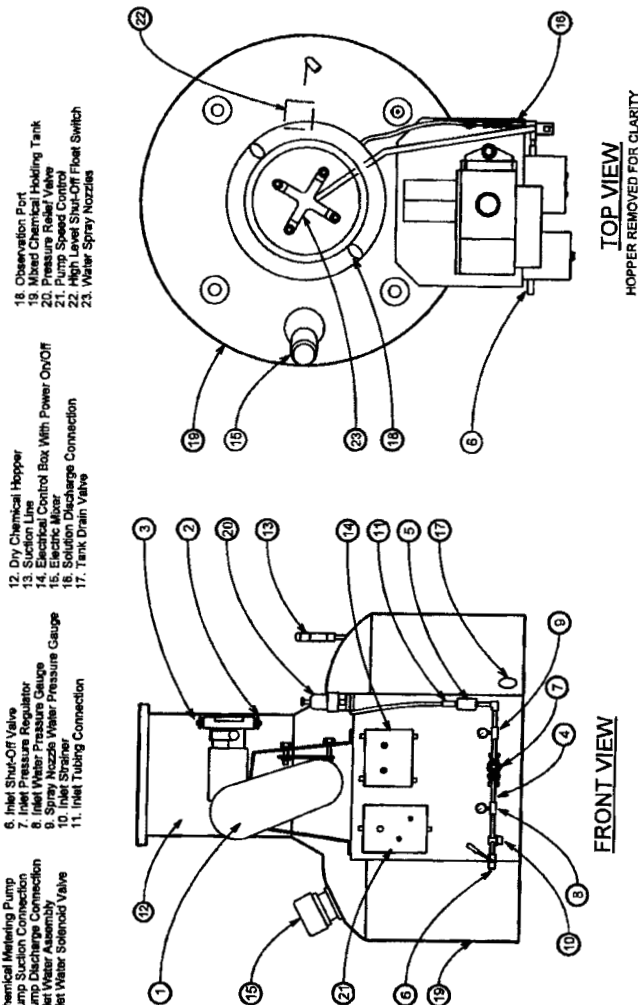
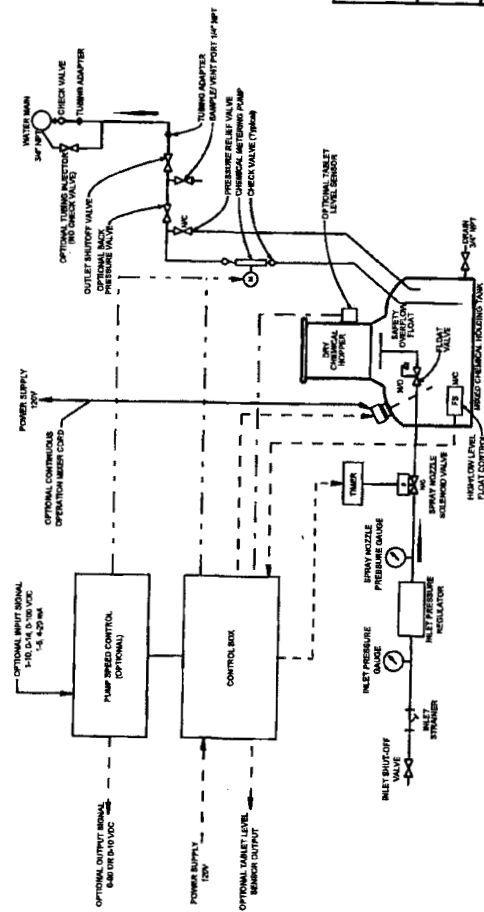
- A. 15% ARCH (Chemical) system
- B. Polyethylene system
- C. Integrated, level controlled solution tank
- D. Adjustable flow control valve
- E. Manual on/off valve (at inlet)
- F. Manual mixing pump
- G. Chemical metering pump
- H. On/off pump control switch
- I. Motorized control function box
- J. Corrosion resistant 40 piping
- K. Reverse flow check valves
- L. Total solution output control valve

A. Safety switch, 2 pole, fused for 30 Amps, for 120 Volts, 60 cycle, single phase power.

CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 61.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals label chlorinator systems incorporate a patented chlorinator which is designed to utilize ARCH Chemicals 1-X[®] solid calcium hypochlorite concentrate (Approved NSF Standard 60, Meets AWWA Standard for Potable Water Disinfection Registration # 1265-1178). The chlorinator is mounted on a polyethylene label and collected in a solution tank. The chlorinator is sprayed on the hypochlorite label and collected in a solution tank. The solution is then pumped out of the tank through a chemical metering pump. This metering pump is then adjusted to obtain the desired Cl₂ residual.

FRONT VIEW




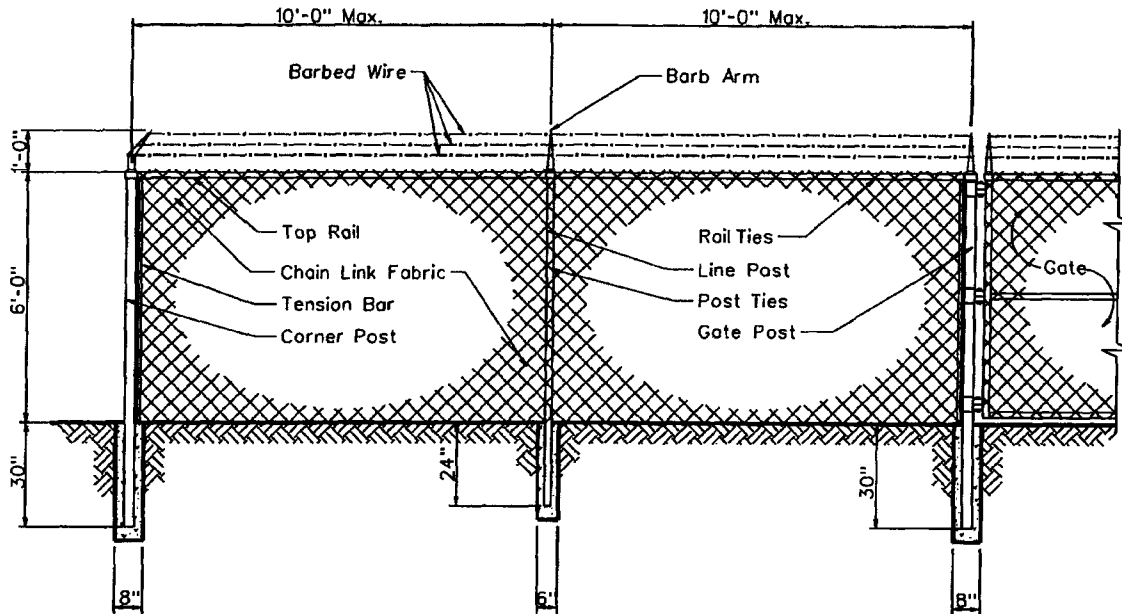
FOR VIEW
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

DRAWN BY: CB	APPROVED BY: MW	DATE: 02-09-2000		E-9-25-1
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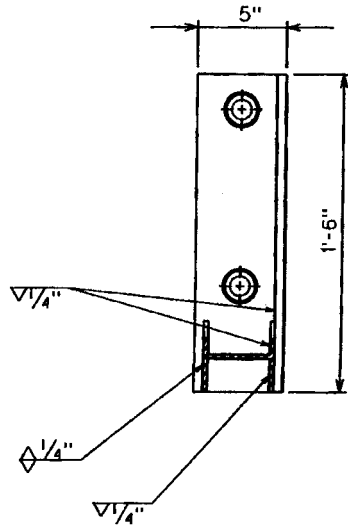
Line Post:	1-7/8" O.D.	1.74 lbs. P/L.F.	ASTM A-256
End Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Corner Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Gate Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Top Rail:	1-5/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Chain Link Fabric:	9 Ga. 2" Mesh Galv. Before Weave		
Selvage:	Barb/Knuckle		
Fittings:	Pressed Steel		
Barb Wire:	2-1/2 Ga./2 Point		
Barb Arm:	1 Piece/45° Arm		
Tension Wire:	9 Ga./Galv.		
Line Post Set:	6"x24" In Concrete		
Terminal Post Set:	8"x30" In Concrete		

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY:	CCO	APPROVED BY:	MW	DATE:	7/7/1992	△	2/9/2001	E-9-26-1
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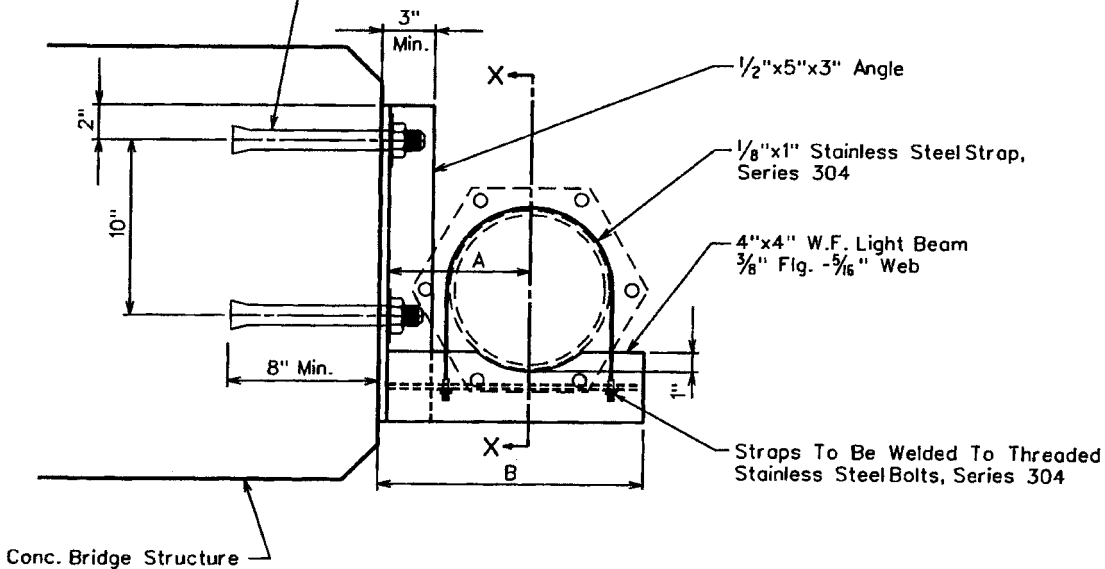
SECTION X-X

NOTES

1. Minimum 2 Supports Per Joint Of Pipe.
2. All Bolts Shall Have A Lock Washer Under The Nut.
3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	A	B
8"	8"	15"
10"	9"	17"
12"	10"	19"

1/8"x12" Stainless Steel Wedge Bolts, Series 304



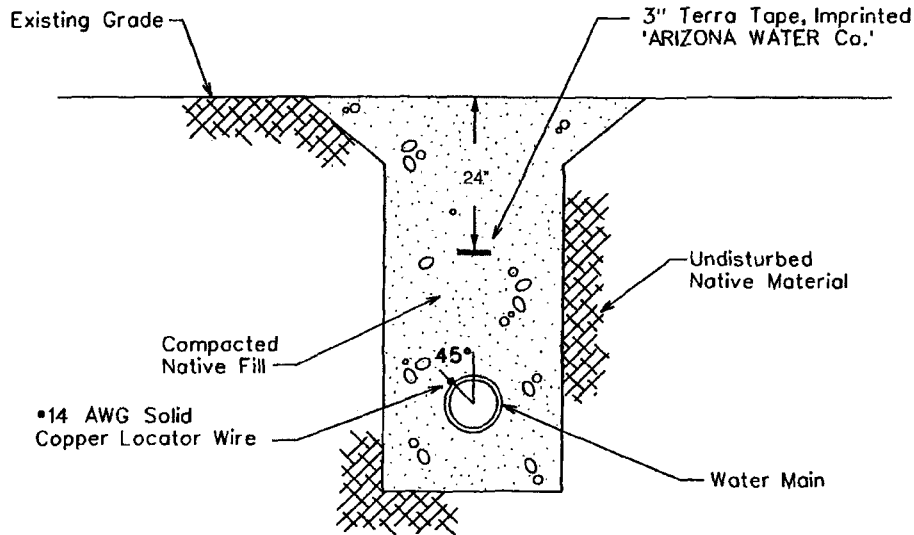
SUSPENSION DETAIL

ARIZONA WATER COMPANY

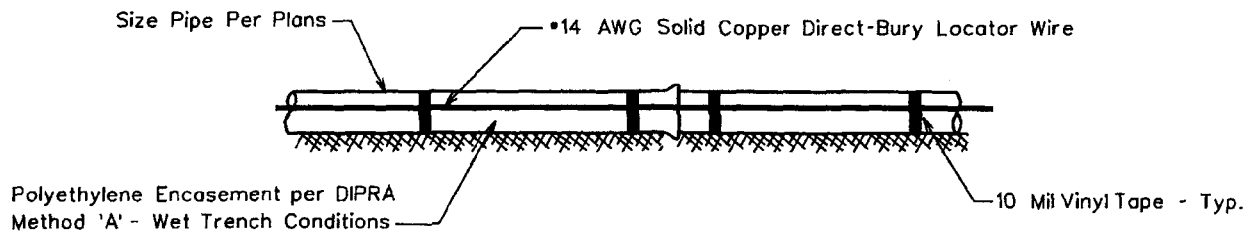
STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

DRAWN BY: JPK	APPROVED BY: MJW	DATE: 7-12-96	△	E-9-27-1
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TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

1. All pipe shall have #14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
2. The Locating Wire Shall Terminate At The Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

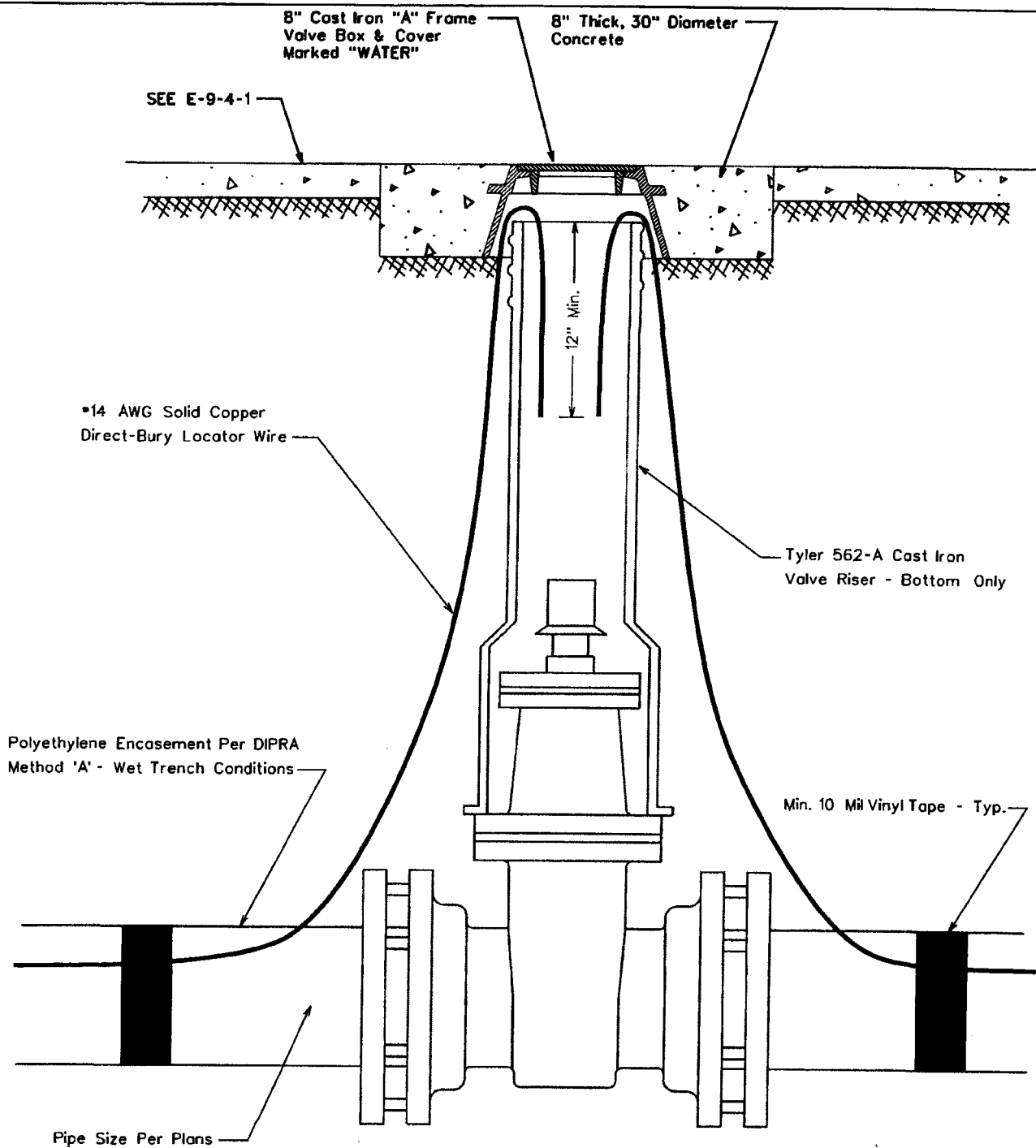
1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.
 - A) The Backfill Shall Be Sufficiently Levelled So That The Tape Is Installed On A Flat Surface.
 - B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
 - C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PIPE WARNING TAPE AND LOCATOR WIRE

DRAWN BY: CB	APPROVED BY:	DATE: 03.24.1997	△ 09.27.2006	E-9-28-1
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

LOCATOR WIRE TERMINATION

DRAWN BY:

CB

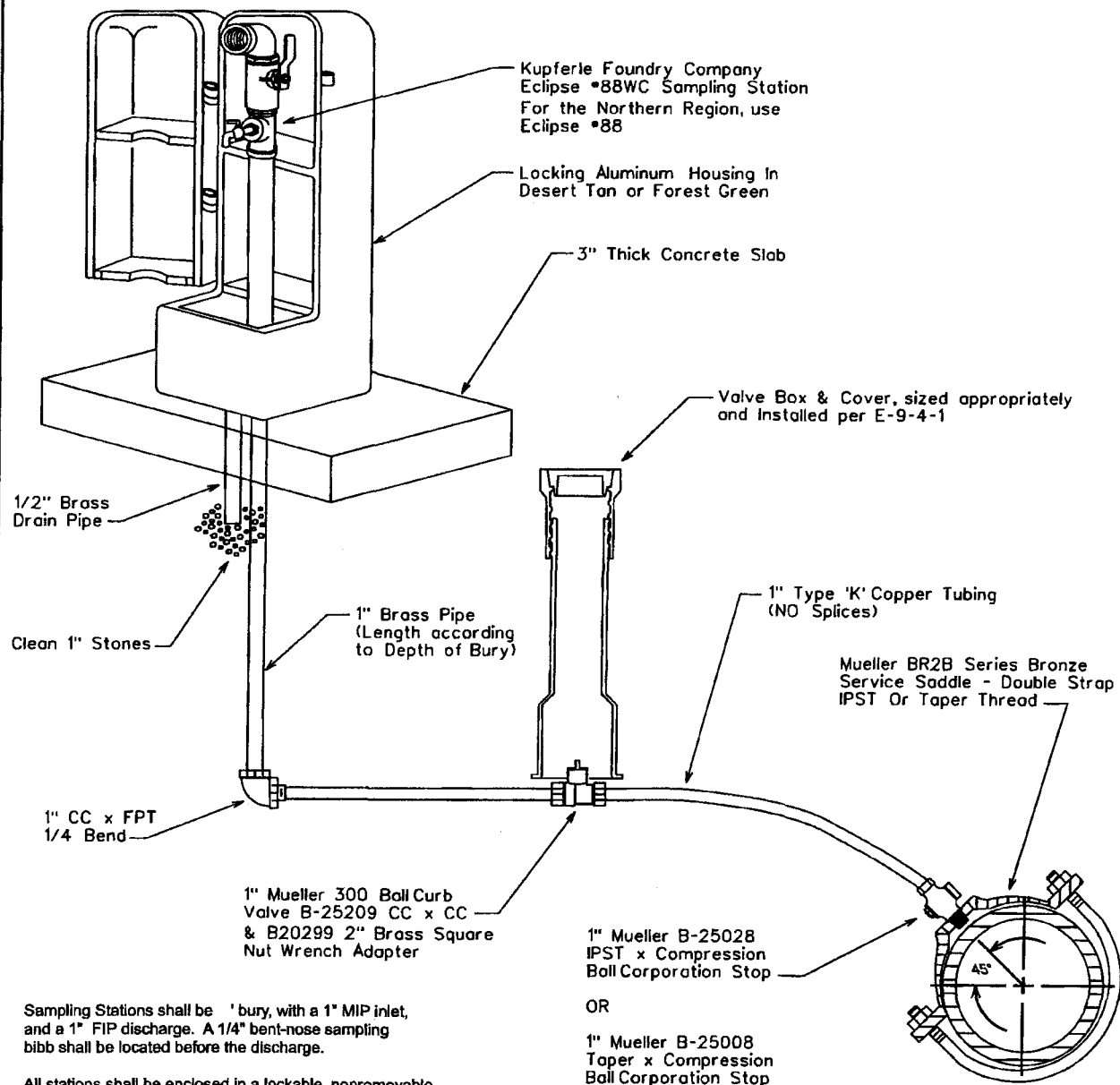
APPROVED BY:

DATE:

09.27.2006



E-9-28-2



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
taps on mains other than ductile iron is 12"

Pipe Depth Per
E-8-1-2, Item 3.

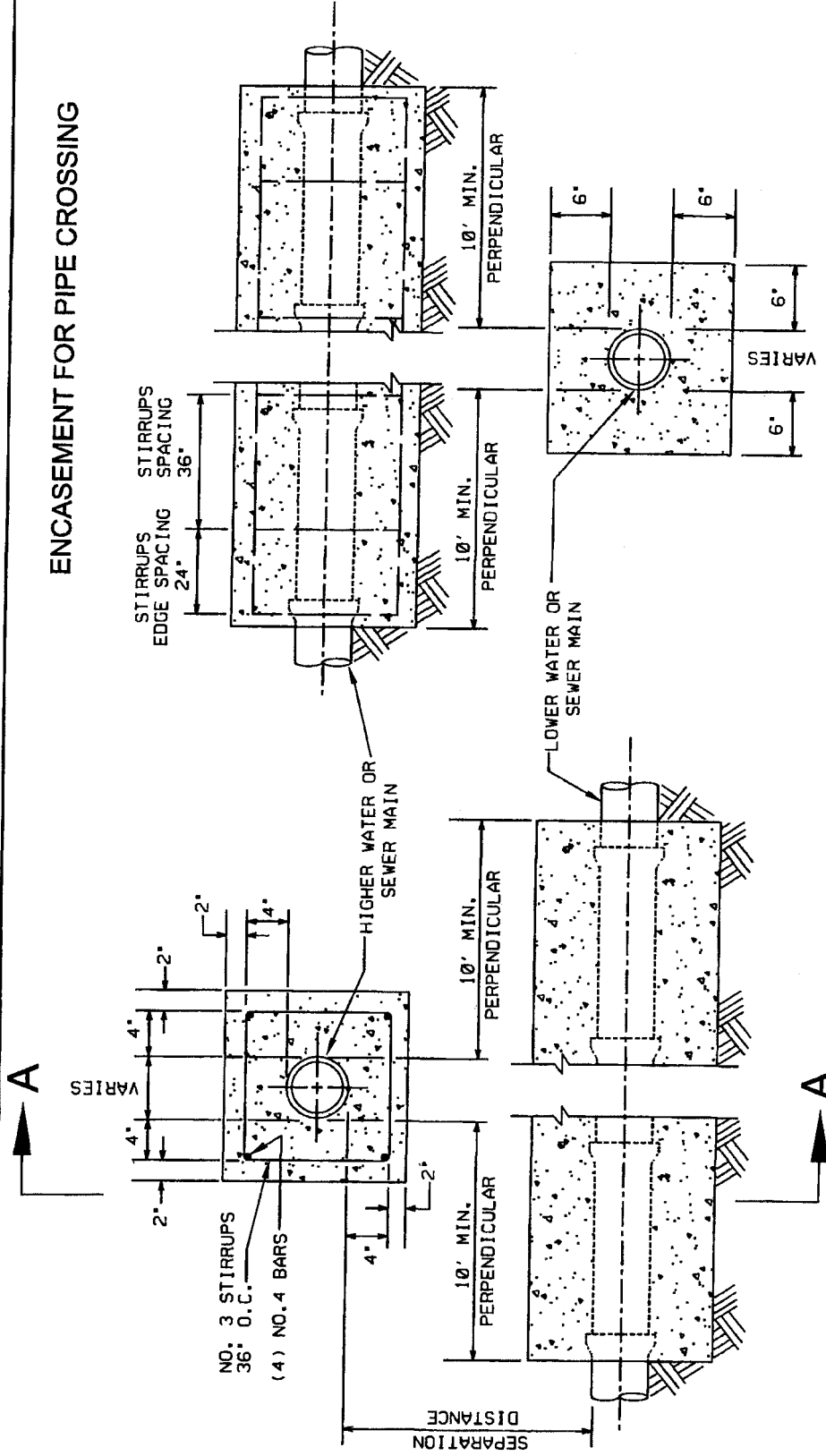
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SAMPLING STATION

DRAWN BY: CB	APPROVED BY: MW	DATE: 01.24.2007	△	E-9-29-1
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ENCASEMENT FOR PIPE CROSSING



NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.

ARIZONA WATER COMPANY

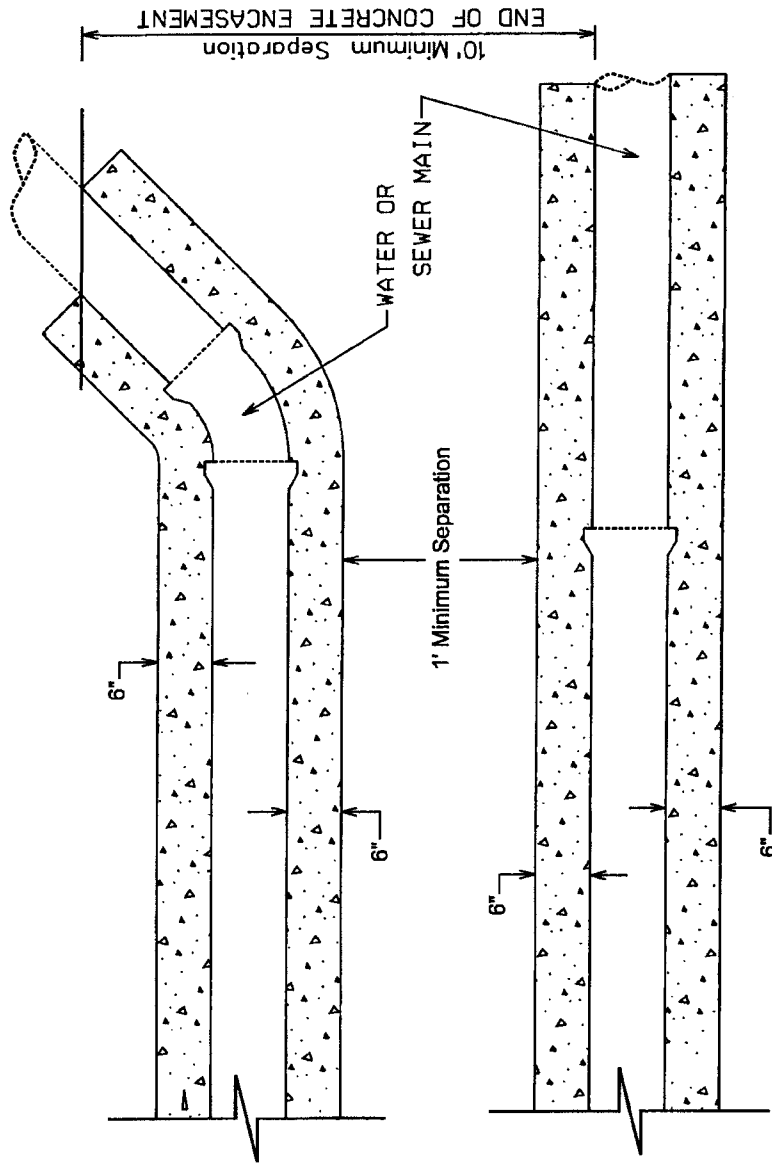
STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WATER AND SANITARY SEWER
SEPARATION/PROTECTION

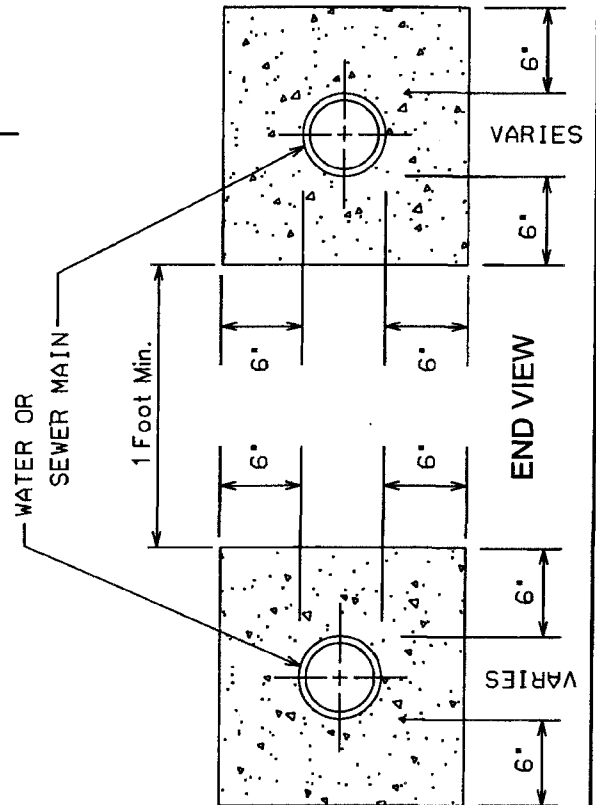
DRAWN BY: CB	APPROVED BY: JW	DATE: 04.07.2008	E-9-30-1
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NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.



PLAN VIEW



ENCASUREMENT FOR PARALLEL PIPES

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

**WATER AND SANITARY SEWER
SEPARATION/PROTECTION**

DRAWN BY: CB	APPROVED BY: JW	DATE: 04.07.2008	△	E-9-30-2
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WA 1-4932

Pinewood



**Federal Communications Commission
Public Safety and Homeland Security Bureau**



VHF/UHF Narrowbanding Information for Public Safety Licensees

December 2010



Outline

- Narrowbanding Basics
- Narrowbanding Deadlines
- How to Prepare for Narrowbanding
- Modifying Licenses to Reflect Narrowbanding
- Additional Information Resources



Narrowbanding Basics



- Who is required to narrowband?
 - All Public Safety and Industrial/Business licensees in the 150-174 MHz (VHF) and 421-512 MHz (UHF) bands
- What is required?
 - By January 1, 2013, licensees must migrate their systems from 25 kHz (wideband) to 12.5 kHz (narrowband) channel bandwidth or a technology that achieves equivalent efficiency



Benefits of Narrowbanding



- Narrowbanding ensures more efficient use of the spectrum and greater spectrum access for public safety and non-public safety users
 - Will relieve congestion in and result in increased channel availability for public safety VHF/UHF systems
- Narrowbanding has been consistently supported by the public safety community, including APCO, NPSTC, and other organizations



Outline



-
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- Narrowbanding Basics
 - Narrowbanding Deadlines
 - How to Prepare for Narrowbanding
 - Modifying Licenses to Reflect Narrowbanding
 - Additional Information Resources



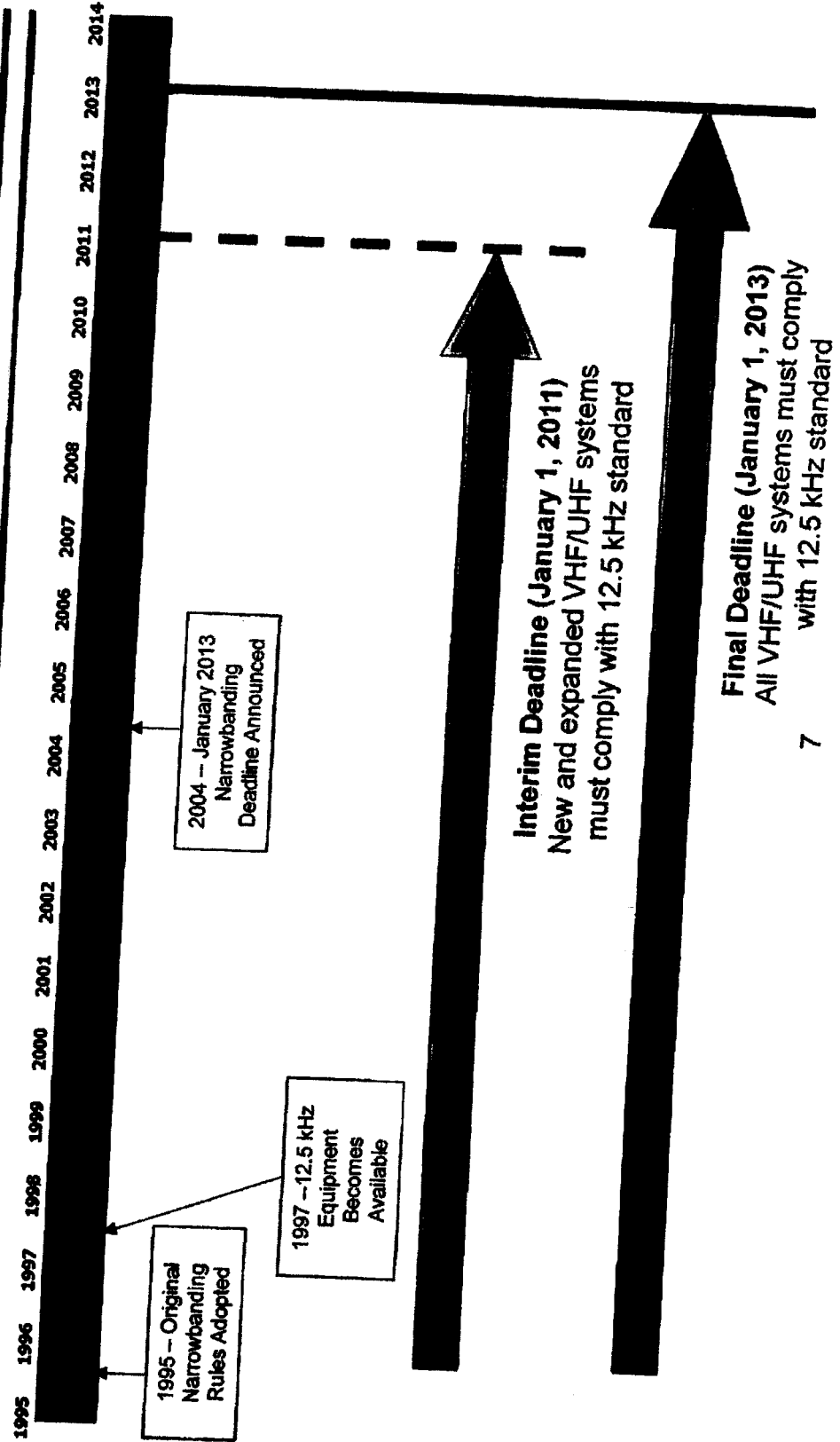
Narrowbanding Deadlines

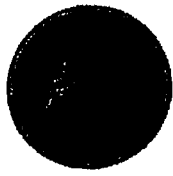


- All licensees must complete narrowbanding to 12.5 kHz by January 1, 2013
 - FCC will also no longer allow manufacture or importation of equipment that includes a 25 kHz mode
- Some interim requirements take effect on January 1, 2011:
 - 12.5 kHz operation required for all new VHF/UHF systems or expansion of existing systems
 - FCC will not certify new equipment that includes a 25 KHz mode



Narrowbanding Timeline





Why Meeting the Deadline Is Important



-
-
- After January 1, 2013, FCC interference rules will not protect non-compliant wideband systems from harmful interference
 - Systems that fail to narrowband by the deadline could create interference or interoperability problems for systems that have narrowbanded
 - Wideband equipment will not be available after January 1, 2013



The Deadline Will Not Be Extended



- The Commission has recently reaffirmed the January 1, 2013 deadline
- Licensees facing unique circumstances may request waivers, but waiver requests must meet a high standard and are not routinely granted
- Licensees concerned about meeting the deadline should focus on planning and preparation
- Informal contact with the Bureau is encouraged prior to any filing



Future Narrowbanding to 6.25 kHz Technology



- Narrowbanding rules provide for eventual migration from 12.5 kHz to 6.25 kHz bandwidth
 - Intended to further increase efficiency and channel availability
- The FCC has not set a deadline for 6.25 kHz implementation
 - No deadline will be established without further notice and comment
- Licensees may narrowband to 6.25 kHz voluntarily
 - All 150-174 MHz and 421-512 MHz equipment certified after January 1, 2013 must include 6.25 kHz capability



Outline



-
-
- Narrowbanding Basics
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Preparing for Narrowbanding



- Prepare NOW – January 1, 2013 is approaching fast!
- Determine how narrowbanding will affect your system
 - Will existing equipment need replacement/retuning?
 - Will additional sites be needed to maintain coverage?
 - Is coordination with neighboring systems required?
- Develop a compliance plan
 - Timeline
 - Funding requirements
- Contact the Public Safety and Homeland Security Bureau with questions/concerns



Availability of Narrowband Equipment



- All VHF/UHF equipment certified since 1997 has 12.5 kHz capability
 - Many systems have equipment with dual 25 kHz/12.5 kHz capability, making the narrowbanding transition easier
- Check with your vendor to determine whether your existing system equipment is narrowband-capable or needs modification/replacement



Funding Considerations

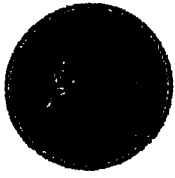
- Cost of narrowbanding will vary depending on the nature of each licensee's existing system
 - Narrowbanding generally does not require a system upgrade, though licensees may combine narrowbanding with other scheduled upgrades or modifications
 - Narrowbanding costs may be more substantial for older systems that require replacement of existing equipment
- Funding to support narrowbanding may be available through federal grant programs (agency contact information provided in "Additional Information Resources" section)



Outline



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Licensing Modifications



- Licensees should modify their licenses to add a narrowband emission designator prior to commencing narrowband operations
 - Licensees may maintain both narrowband and wideband designators on their licenses while they are transitioning their systems
- Once the narrowband transition is complete, licensees should modify their licenses by removing the wideband emission designator
- These actions can be completed online using ULS



Frequency Coordination



- Frequency coordination is not required for addition of narrowband emissions designator or removal of wideband emissions designator, provided no other changes are being made
 - For licensees north of Line A or west of Line C, reduction in bandwidth does not require Canadian coordination
- Frequency coordination is required when narrowbanding is combined with other modifications that alter a station's footprint
 - E.g., changes in location, antenna height, ERP, as well as when switching from analog to digital emissions



Outline



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PSHSB Website and Contacts



Roberto Mussenden

202-418-1428

Roberto.Mussenden@fcc.gov

Zenji Nakazawa

202-418-7949

Zenji.Nakazawa@fcc.gov

Narrowbanding Mailbox: narrowbanding@fcc.gov

Bureau Website:

<http://www.fcc.gov/pshs/public-safety-spectrum/narrowbanding.html>



Other Resources



- http://www.aaacomm.com/fcc_licensing.htm
- <http://www.mrfac.com/Mandatory-Narrowbanding.html>
- <http://www.npstc.org/narrowbanding.jsp>
- <http://www.IMSAafety.org>



Federal Resources



- DHS
 - Office of Emergency Communications (oecc@hq.dhs.gov)
 - SAFECOM
 - <http://www.safecomprogram.gov/SAFEOM/grant/default.htm>
- FEMA
 - www.fema.gov/grants
 - <http://www.fema.gov/government/grant/ieccgp/index.shtm>
Interoperable Emergency Communications Grant Program
- DOJ National Institute of Justice
 - <http://www.ojp.usdoj.gov/nij/topics/technology/communication/radios/fcc-narrowbanding.htm>

ARIZONA WATER COMPANY

WORK AUTHORIZATION

W.A. NUMBER: 1-4932
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 1 of 2

SYSTEM: SEDONA VALLEY VISTA
DIVISION: VERDE VALLEY
TAX CODE: 0976

WORK TO START BY: UPON AUTHORIZATION
WORK TO BE FINISHED BY: WITHIN 180 DAYS

DESCRIPTION OF WORK:

Replace radios at 16 sites to be compliant with FCC narrow band requirement. Sites include: Sedona Office, Harmony High Park Tank, Rainbow Well No. 6, Williams Well No. 7, Southwest Center Well No. 8, Harmony Hills Well No. 12, Sedona Golf Resort Tank, Rancho Rojo Well, Sedona Golf Resort Well, Valley Vista Well No. 13, Montezuma Hills Tank, Wickenburg Mesa Tank, Rimrock Well No. 1, Rimrock Well No. 2, Montezuma Haven Well No. 3, and Pinewood Unit 9 Tanks. Construct in accordance with attached drawings and/or Arizona Water Company specifications.

FACTORS JUSTIFYING WORK:

APPROVED 2012 BUDGET ITEM (\$125,000)

The FCC narrow banding mandate requires that all existing radios that operate on channel bandwidths of 25 kHz be converted to 12.5 kHz or less on or before January 1, 2013. These radio replacements and modifications are needed in order for the Company to provide safe, reliable, and adequate water service.

COST ESTIMATE		AUTHORIZATION	DATE
COST OF WORK:		PREPARED BY:	
MATERIAL	11,000	Mike Loggins	4-26-12
LABOR	8,400	REVIEWED FOR ESTIMATOR VERIFICATION:	
CONTRACT PORTION	93,371	Charles Briggs	05-04-2012
OVERHEAD	12,405	REVIEWED BY:	
TOTAL AUTHORIZED EXPENDITURES CHARGEABLE TO THIS W.A.	\$ 125,176	Andy Haas	4-26-12
FUNDS RECEIVED:		APPROVED BY ENGINEERING:	
CONTRIBUTIONS RECEIVED	0	Fredrick Schneider	5-1-2012
REFUNDABLE ADVANCES RECEIVED	0	APPROVED BY FINANCE:	
TOTAL CONTRIBUTIONS/ADVANCES	0	Joseph Harris	5/2/12
NET CASH REQUIRED	\$ 125,176	AUTHORIZED BY PRESIDENT:	
COMMENTS:		William Garfield	5-4-2012
<p>There are two separate contracts with Global Data Specialists associated with this WA:</p> <ol style="list-style-type: none"> 1. Sedona 2. Valley Vista 		CONSTRUCTION RELEASE:	
		<p>RELEASED TO CONSTRUCTION</p> <p>Authorized by FRED SCHNEIDER</p> <p>Date 5/4/2012</p>	

AFH

ARIZONA WATER COMPANY

WORK AUTHORIZATION - DETAIL SHEET

W.A. NUMBER: 1-4932
P.E. NUMBER:
BUDGET ITEM NO.: B-1
SHEET NO.: 2 of 2

RETIREMENT PROPERTY UNITS		PLANT PROPERTY ACCOUNT	UNIT DESCRIPTION	QUANTITY	UNIT INSTALLED AND W.A. NUMBER
PROJECT DESCRIPTION					
Replace radios at 16 sites to be compliant with FCC narrow band requirement. Sites Include: Sedona Office, Harmony High Park Tank, Rainbow Well No. 6, Williams Well No. 7, Southwest Center Well No. 8, Harmony Hills Well No. 12, Sedona Golf Resort Tank, Rancho Rojo Well, Sedona Golf Resort Well, Valley Vista Well No. 13, Montezuma Hills Tank, Wickiup Mesa Tank, Rimrock Well No. 1, Rimrock Well No. 2, Montezuma Haven Well No. 3, and Pinewood Unit 9 Tanks.					
C O N T R A C T W O R K	DESCRIPTION	PLANT PROP ACCT	QUANTITY	UNIT COST	TOTAL
	Configure RTU and onsite integration for Valley Vista	397.2	1	\$ 6,525.00	\$ 6,525
	Purchase Ace radio for Valley Vista	397.2	4	3,790.00	15,160
	Purchase OIT for Valley Vista	397.2	1	5,792.00	5,792
	Program and onsite integration of OIT for Valley Vista	397.2	1	5,760.00	5,760
	Conduct radio path survey for Sedona	397.2	1	4,420.00	4,420
	Electrical install for Valley Vista	397.2	1	6,500.00	6,500
	Configure RTU and onsite integration for Sedona	397.2	1	7,952.50	7,953
	Purchase lo power radio for Sedona	397.2	5	450.00	2,250
	Purchase DPSK card for Sedona	397.2	5	180.00	900
	Purchase Ace radio for Sedona	397.2	3	3,813.33	11,440
	Electrical install for Sedona	397.2	1	2,827.00	2,827
	Configure RTU and onsite integration for Rimrock	397.2	1	7,952.50	7,953
	Purchase lo power radio for Rimrock	397.2	5	450.00	2,250
	Purchase DPSK card for Rimrock	397.2	5	180.00	900
	Electrical install for Rimrock	397.2	1	2,828.00	2,828
	Shipping, bonds, and tax for Valley Vista	397.2	1	4,598.00	4,598
	Shipping, bonds, and tax for Sedona	397.2	1	2,329.50	2,330
	Shipping, bonds, and tax for Rimrock	397.2	1	2,329.50	2,330
	Replace Base Station Radio	397.1	1	655.00	655
TOTAL CONTRACT WORK					\$ 93,371
M A T E R I A L S	Purchase Wonderware software	397.2	1	\$ 9,500.00	\$ 9,500
	Purchase SCADA computer	397.2	1	1,500.00	1,500
	SERVICE CONNECTIONS: DOUBLE-LONG	345			
	SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	SERVICE CONNECTIONS: SINGLE-LONG	345			
	SERVICE CONNECTIONS: SINGLE-SHORT	345			
METERS	346				
TOTAL MATERIALS					\$ 11,000
L A B O R	Engineering Design	397.2	40	\$ 50.00	\$ 2,000
	Project Management	397.2	40	50.00	2,000
	TESTING FEE				
	PERMIT FEE				
	SURVEY FEE				
	FIELD INSPECTION	397.2	80	55.00	4,400
	INSTALL SERVICE CONNECTIONS: DOUBLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: DOUBLE-SHORT	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-LONG	345			
	INSTALL SERVICE CONNECTIONS: SINGLE-SHORT	345			
TOTAL LABOR					\$ 8,400
SUBTOTAL - CONTRACT WORK, MATERIALS, AND LABOR					\$ 112,771
OVERHEAD					12,405
TOTAL					\$ 125,176
REFUNDABLE PORTION <input type="checkbox"/> NON-REFUNDABLE PORTION <input type="checkbox"/>					
COST ESTIMATE					\$ 125,176

AFH

WA 1-4932 - Replace Five Wireless Telemetry and Voice Communication Units to Comply with FCC Narrowband Regulations

ID	Task Name	Start	Finish	Duration	Jan '12	Feb '12	Mar '12	Apr '12	May '12	Jun '12	Jul '12	Aug '12	Sep '12	Oct '12	Nov '12	Dec '12
1	Pinewood FCC Narrow Band Schedule	2/6/2012	12/28/2012	235 days	1	8	15	22	29	5	12	19	26	2	9	16
2	Update Quotes	2/6/2012	3/16/2012	30 days												
3	Execute Contract Documents	3/19/2012	4/13/2012	20 days												
4	Procure Materials	4/16/2012	7/6/2012	60 days												
5	Program Radios	4/16/2012	7/6/2012	60 days												
6	Install Radio Controls, Conduit, and Appurtenances	7/9/2012	9/14/2012	50 days												
7	Start-Up	9/17/2012	10/26/2012	30 days												
8	Field Troubleshooting	10/29/2012	12/7/2012	30 days												
9	Project Close Out	12/10/2012	12/28/2012	15 days												
10	In Service	12/28/2012	12/28/2012	0 days												



ARIZONA WATER COMPANY

Verde Valley Division
65 Coffee Pot Dr. Suite 7
Sedona, AZ 86336 PH: 928-282-7082

PROPOSAL/CONTRACT

CONTRACTOR: Global Data Specialists	SYSTEM: Sedona
ADDRESS: 1815 W. First Avenue, Suite 110	W.A. No(s): 1-4932
CITY/ST./ZIP: Mesa, Arizona 85202	BID DUE DATE: March 31, 2012

CONTRACTOR SUBMITS this PROPOSAL/CONTRACT to ARIZONA WATER COMPANY, an Arizona Corporation (the "Company"), to perform the work and complete the project described on Page 2 (the "Project"), as an independent prime contractor.

- Contractor certifies that it has a complete copy of, and has read, understands and accepts, the Company's General Conditions of Contract, and the Company's Construction Specifications and Standard Specification Drawings (the "Specifications"), all of which are attached hereto. Contractor has examined the specific plans and related construction drawings for the Project (the "Drawings"), copies of which are also attached hereto. The General Conditions of Contract, Specifications and Drawings are incorporated into this Proposal/Contract. Contractor affirms that all work and materials to be furnished or purchased for the Project will be in strict conformance with the General Conditions of Contract, Specifications and Drawings.
- Contractor represents and warrants that it has satisfied and complied with the provisions of Section 6, Contractor Understands Work and Working Conditions, of the General Conditions of Contract prior to submitting this Proposal/Contract.
- Contractor represents that this Proposal/Contract is fair and honest in all respects, is submitted in good faith and is not submitted in collusion with any other company, entity or person.
- Contractor acknowledges that one hundred percent (100%) Performance and Payment Bonds are required and must be provided to the Company prior to the commencement of work.
- Prior to the commencement of work, Contractor will submit to the Company a list of all materials to be used in the Project. This materials list will include the manufacturer, part number, price and quantity included in this Proposal/Contract.
- Contractor will furnish all labor, tools, equipment and materials required to complete the Project according to the General Conditions of Contract, Specifications and Drawings. No materials purchased by Contractor to be incorporated into the Project are subject to tax at the time of purchase and Contractor will not charge the Company for any such tax. Contractor will pay the applicable transaction privilege tax (the "Contracting Tax") on the Project after Contractor receives payment of the final Project Invoice from the Company. The cost of materials incorporated into the Project which are exempt by Arizona Revised State Statutes ("A.R.S.") from the Contracting Tax, for example, pipes or valves having a diameter of four (4) inches or larger, including equipment, fittings and any other related part that is used in operating the pipes or valves (A.R.S. §42-5061 B.6.), will not be included in the total cost of the labor and materials upon which the Contracting Tax is computed. Contractor retains full liability and obligation to pay the Contracting Tax and will defend and indemnify the Company against any demand or obligation to pay the Contracting Tax.
- Contractor will maintain detailed accounting records of all materials purchased and incorporated into the Project. Such records will include all supporting original vendor invoices for all materials purchased. Following completion of the Project, Contractor will submit an itemized accounting to the Company which will include all supporting original vendor invoices and satisfactory evidence of payment therefor. The Company will not pay Contractor for materials not actually incorporated into the Project, and the disposition of such materials will remain Contractor's responsibility.
- The Estimated Total Cost of the Project, shown on Page 2, is based on estimated labor and material quantities to be furnished. It includes an estimate of the Contracting Tax and the cost of the required Performance and Payment Bonds. Contractor will not cancel, modify or withdraw this Proposal/Contract during a ninety-day (90) period commencing on the Bid Due Date. The Company may accept this Proposal/Contract by signing and mailing, or otherwise delivering, a copy hereof to Contractor during such ninety-day (90) period. If the Company does not accept this Proposal/Contract during such ninety-day (90) period, Contractor may cancel this Proposal/Contract by giving written notice of cancellation to the Company.
- Prior to the commencement of work, Contractor will provide the Company with a detailed construction schedule, in either Gantt or UPM form, identifying all tasks to be performed from the date of the written Commencement Notice through completion of the Project, including testing, training of Company Personnel and final Project Invoicing. Contractor will provide the Company with a copy of such construction schedule documenting the progress of work on the Project at least monthly.
- Contractor will not commence work on the Project until the Company gives Contractor a written Commencement Notice. Contractor will complete the Project within 180 calendar days after the Commencement Notice is issued.
- Following the Company's written notice of satisfactory completion of the Project, and upon receipt of the final Project Invoice from Contractor, the Company shall pay Contractor the actual total cost of the Project, which will be calculated as shown on Page 2, except that actual labor and material quantities installed/constructed will be substituted for the estimated labor and materials quantities, and the Contracting Tax will be recalculated based on such actual labor and materials quantities.
- The amount of applicable liquidated damages (or Contractor's failure to deliver or perform) within the time limit shown in Paragraph 10 may be deducted from the Company's payment of the final Project Invoice. This provision shall not limit the Company's ability to terminate this Proposal/Contract for Contractor's unsatisfactory performance or failure to perform as provided in the General Conditions of Contract, Specifications or Drawings, or in this Proposal/Contract.

SPECIAL CONDITIONS:

CONTRACTOR:	PROPOSAL/CONTRACT ACCEPTED:
Global Data Specialists	ARIZONA WATER COMPANY
By: <i>[Signature]</i>	By: <i>[Signature]</i>
Print Name: <i>THANE MANDER</i>	Print Name: Fredrick K. Schneider, PE
Title: <i>SALES MANAGER</i>	Title: Vice President - Engineering
Date: <i>4/23/12</i>	Date: <i>5-4-12</i>

APR



Verde Valley Division
85 Coffee Pot Dr., Suite 7
Sedona, AZ 86336 PH: 528-282-7092

PROPOSAL/CONTRACT

CONTRACTOR: <u>Global Data Specialists</u>		SYSTEM: <u>Sedona</u>
AZ CONTRACTOR LICENSE NO:	CLASSIFICATION:	W.A. No(s): <u>1-4932</u>
ADDRESS: <u>1815 W. First Avenue, Suite 110</u>		BID DUE DATE: <u>March 31, 2012</u>
CITY/ST/ZIP: <u>Mesa, Arizona 85202</u>		BID BOND REQUIRED: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

DESCRIPTION
OF PROJECT:

Provide Narrow Banding upgrade for the Sedona Water System Radio Controls.

[illegible]

NOTE: The Estimated Total Cost includes all labor and materials for backfill, pavement replacement, chip seal, and traffic control necessary for the Project.



ARIZONA WATER COMPANY

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT: E-4-1

CONSTRUCTION SPECIFICATIONS: E-8-1

STANDARD SPECIFICATION DRAWINGS: E-9-1

2007 EDITION WITH 2010 REVISIONS

ARIZONA WATER COMPANY

GENERAL CONDITIONS OF CONTRACT: E-4-1

ARIZONA WATER COMPANY

E-4-1

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

- A. **Company.** The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. **Company's Authorized Representative.** The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. **Contractor.** The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. **Construction Drawings.** The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. **Invitation to Bid.** The term "Invitation to Bid" means the current copy of Arizona Water Company's Form E-3-11-4 Request for Proposal/Contract or Form E-3-12-2 Invitation to Bid.
- F. **Contract.** The word "Contract" means the written document titled "Contract" or "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.
- G. **Inspector.** The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed.

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than \$1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than \$1,000,000 for each occurrence.
SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE	Contractor shall either require each of its subcontractors to procure and to maintain Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Section 5 or insure the activities of its subcontractors in Contractor's own policy, in like amounts.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall

mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. PUBLIC SAFETY AND CONVENIENCE

Contractor shall at all times conduct its work so as to ensure the least possible obstruction to traffic and other inconvenience to the general public and the residents and businesses in the vicinity of the work, and to ensure the protection of persons and property.

To protect persons from injury and to avoid property damage, Contractor shall provide and maintain adequate barricades as required during the progress of the work and until it is safe to use the property for its intended purpose. The rules and regulations of the local governmental agencies and specific permit requirements respecting safety provisions shall be observed at all times.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. PROPERTY PROTECTION

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the Company. Any property damaged shall be restored by Contractor, at his expense, to Company's satisfaction.

18. RESPONSIBILITY OF CONTRACTOR

The work shall be under Contractor's responsible care and charge. Contractor shall bear all loss and damage whatsoever and from whatsoever cause, except that caused solely by the act of Company, which may occur on or to the work during the fulfillment of the Contract. If any loss or damage occurs, Contractor shall immediately make good any such loss or damage, and in the event of Contractor refusing or neglecting to do so, Company may, or by the employment of some other person, make good any such loss or damage, and the cost and expense of so doing shall be charged to Contractor.

The mention of any specific responsibility or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon Contractor by the Contract. The reference to any specific duty or liability being made herein is merely for the purpose of explanation.

Contractor alone shall at all times be responsible for the safety of Contractor, Contractor's employees, and its subcontractors' employees, and for Contractor and its subcontractors' plant and equipment and the method of performing the work.

19. ERRORS AND OMISSIONS

If Contractor, in the course of the work, becomes aware of any errors or omissions in the Contract Documents or in the instructions, or if Contractor becomes aware of any discrepancy between the Contract Documents and the physical conditions of the site of

the work, Contractor shall immediately inform Company in writing. Any work done by Contractor after such discovery, until authorized by Company, will be done at Contractor's risk.

20. LAWS, REGULATIONS

Contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable federal, state, local and other legally required health and safety standards, orders, rules, regulations or other laws, pertaining to the conduct of the work. Contractor shall be liable for, and shall defend and indemnify Company against and hold it harmless from, all violations of any law, ordinance, rule, regulation, standard, or order in connection with work furnished by or on behalf of Contractor. If Contractor observes that the Contract Documents are at variance with any law, ordinance, rule, regulation, standard, or order it shall promptly notify Company in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. Contractor shall not perform any work contrary to such laws ordinances, rules, regulations, standards, or orders.

21. PERMITS, FEES AND INSPECTIONS

Permits and licenses necessary for the prosecution of the work, including, but not limited to, any National Pollution Discharge Elimination Systems (NPDES) Permits required by U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality shall be secured, paid for, and complied with by Contractor.

Contractor shall be responsible for its actions and shall abide by all conditions and/or restrictions set forth in the NPDES Permit and any other permit or license required for this project.

Company shall at all times have access to the work whenever it is in preparation or in progress and Contractor shall provide proper facilities for such access and for all inspections. If the Contract Documents, the General Superintendent's instructions, laws, ordinances or any public authority require any work to be inspected or approved, Contractor shall give timely notice of its readiness for inspection.

Inspection of the work shall not relieve Contractor of any of its obligations even if defective work or unsuitable materials may have been previously overlooked by Company and accepted or estimated for payment. If any work is found not in accordance with the Contract Documents, Contractor, at its sole cost and expense, shall promptly make good such defective work.

22. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

23. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

24. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

25. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

26. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

27. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

28. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

29. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the

Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

30. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determine.

31. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

32. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph(s) 30 and 33 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

33. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

34. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in

accordance with A.R.S. 40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay the cost to relocate its or other structures when such structures are found occupying the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

35. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

36. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

37. INDEMNITY

A. The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, loss, actions, causes of action, expense, penalties, fines, assessments, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, and for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons, and the violation of any law, ordinance, rule, regulation, standard, or order resulting from or in any manner arising out of or in connection with the performance of the work under the Contract, howsoever same may be caused, including, without limitation, the Company's active or passive negligence. The Contractor shall also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons, or concerning any court or administrative proceeding concerning the violation of any law, ordinance, rule, regulation, standard, or order. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company.

B. Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages, costs, expenses and attorney's fees, suffered or incurred on account of any breach of any obligation, covenant or other

provision of this contract, including without limitation, breach of the indemnity provisions of subsection A of this Section 37.

- C. Contractor further agrees to defend, indemnify and hold harmless the Company, its directors, officers, employees, and agents, from and against any and all costs, damages, claims, expenses, violations, notices of violations, penalties, liens, assessments, and liabilities of every kind and nature, foreseeable or unforeseeable, directly or indirectly, arising from any release, removal, generation, use, storage or disposal on, under, around, or from the well site of any material, substance, or waste, hazardous or non-hazardous, including, without limitation, drilling fluids, mud, cuttings and development and test water howsoever same may be caused, including, without limitation, the Company's active or passive negligence.

38. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

39. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

40. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing

the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

41. GUARANTEE

The Contractor shall guarantee all labor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

42. LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

43. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

- a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.
- b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

44. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

ARIZONA WATER COMPANY

CONSTRUCTION SPECIFICATIONS: E-8-1

ERRATA 2010

ARIZONA WATER COMPANY

E-8-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS DUCTILE IRON

DEFINITIONS

- A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).
- B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager or Superintendent of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.
- C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.
- D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.
- E. Contract. The word "Contract" means the written document titled "Proposal/Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

**CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
DUCTILE IRON**

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

- a. Special compaction and paving for street crossing.
- b. Shoring when required because of the trench depth.
- c. Closing a trench in those areas where no open trench is allowed overnight.
- d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four-inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four-inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

- a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.
- b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. All potable water pipes and fittings shall have NSF-PW seal. Construction materials used in the water system shall be lead free as defined at AAC R28-4-504 and R18-1-101. The Contractor will provide the following materials:

- a. FIRE HYDRANTS: Mueller Super Centurion 250 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-423, 5¼" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.
 - (1) 1 - 4" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)
 - (2) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)
 - (3) 1 - 4½" Pumper Nozzle, NST and 2 - 2½" Hose Nozzles, NPT (Bisbee only.)
 - (4) 1 - 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 - 2½" Hose Nozzles, NPT (Miami only.)

- (5) 1 – 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 – 2½" Hose Nozzle, NST (Superior only.)
- b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB, Cast Iron Cement Lined.
 - (1) Foster Adaptors for MJ, made by Infact Corporation: Available in size 4" to 16". Part No. 4" = 4FA-BC, 6" = 6FA-BC, 8" = 8FA-BC, 10" = 10FA-BC, 12" = 12FA-BC, 16" = 16FA-BC.
- c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including 5/8" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.
- d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non-rising stem, Part No. A-2360 sizes 4" through 12" ; Part No. A-2361 sizes 14" through 36", low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating. The bonnet and stuffing box shall have 304 stainless steel bolts/nuts.
- e. TRACER WIRE and WARNING TAPE:
 - 1. TRACER WIRE: Shall be direct bury AWG #14 solid copper wire, Color: Blue.
 - 2. WARNING TAPE: Reef Industries, Standard Terra Tape in 3" widths. Color: Blue and imprinted 'Arizona Water Company'.
- f. AIR RELEASE VALVE: Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber.
- g. PRESSURE RELIEF VALVE: Watts 174A, Model M, 2" inlet, 2" outlet, Bronze Body, 30lb. to 150lb. pressure range.
- h. MEGA LUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.
- i. METER BOXES:
 - (1) Concrete Box with a steel regular lid, Number 1: Tucson specification.
 - (2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.
- j. PIPE, COPPER: Type K soft copper in 60 or 100-foot coils, per ASTM B88.
- k. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" through 36" pipe. Vendors:

- (1) Pacific States Cast Iron Pipe Company
- (2) Griffin Pipe
- (3) United States Pipe and Foundry Company
- (4) American Ductile Iron Pipe
- (5) Clow Pipe (McWane, Inc.)

l. PIPE, PLASTIC: Plastic pipe, C-900 PVC per ANSI/AWWA C900, Class 150, sizes 6" through 12". NSF61 approved. Furnished in laying lengths of 20'. The barrel shall conform to the outside dimensions of steel pipe (IPS) or cast iron (CI) pipe equivalent and the wall thickness of dimension-ratio (DR) 18.

m. POLYETHYLENE ENCASUREMENT (Polywrap): For all pipeline and related fittings installed, EXCEPT for the Coolidge Division. Minimum 8 Mil. and installed per AWWA C105/A21.5-93 and ASTM A-674-89. Manufactured by the Pacific States Cast Iron Pipe Company. The wrapping tape shall be minimum 10 mil. vinyl tape. No duct tape shall be used.

n. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, conductive compression.

Mueller, H15428, straight coupling, conductive compression by male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Mueller, H15451, straight coupling, conductive compression by female iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 2".

Viking Johnson brand, sold by Mueller: MaxiFit Straight (2"-24"), MaxiFitXtra Straight (4"-8") or MaxiStep Transition, tested to meet AWWA/ANSI C.219-91 specifications – certified to ISO 9001:1994 / Smith – Blair Quantum.

o. STOP, ANGLE METER, BALL: Mueller, valve, B24258, conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

Mueller, valve, B24265, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size 5/8" x 3/4" x 3/4" for a 3/4" service or size 1" for a 1" service.

p. STOP, CORP: Mueller, ball valve, B25008, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: 3/4", 1" and 2".

Mueller, ball valve, B25028, iron pipe thread by conductive compression, tested to meet ANSI/AWWA C800 specification. Sizes 3/4", 1", and 2".

Mueller, 300 Ball Curb Valve, B-25122, taper thread by conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2". (2" service)

- q. STOP, CURB: Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2".

Mueller, B20283, Mueller 300 ball curb valve, female iron pipe by female iron pipe, quarter turn check, tested to meet ANSI/AWWA C800 specification. Size: 2". (Blow-off E-9-8-1).

- r. TAPPING SADDLE: Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronze, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.
- s. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.
- t. TAPPING VALVE: Mueller Resilient Wedge tapping valve, Catalog Number T-2360-16, Class 125, sizes 4" through 12"; T-2361-16, Class 125, sizes 14" to 36" all with Type 304 stainless steel fasteners; bypass valves are required on 18" – 36" valves flange by mechanical joint per ANSI/AWWA C111, iron wedge, non-rising stem. Epoxy coated interior/exterior per ANSI/AWWA C550 for NSF 61 compliance. 250 PSI range for valves 4" to 12". 150 PSI range for valves 14" to 36".
- u. U-BRANCH: Mueller, H15364, 1" male iron pipe by ¾" male iron pipe, tested to meet ANSI/AWWA C800 specification. Size: 1" x ¾" x 13½", straight line.
- v. VALVE BOXES: Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.
- w. VAULTS: Utility Vault Company, Chandler, AZ.
- (1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- (2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.
- (3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.
- x. VALVE, METER: Mueller, B24265-1, Mueller 300 ball angle meter valve, female iron pipe by meter nut, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

Mueller, B25170, Mueller 300 ball straight valve, conductive compression by female iron pipe, quarter turn check, lock wing, tested to meet ANSI/AWWA C800 specification. Size: 1".

- y. YOKES, METER: Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, B24118, with lock wing Mueller 300 angle ball valve, full port, sizes: 1" x 12", 5/8" x 3/4" x 7", 5/8" x 3/4" x 9".

Mueller, 2" copper meter yoke with horizontal inlet and outlet and female iron pipe threads, B2423-99000, with lock wing Mueller 300 ball angle meter valves on inlet and outlet risers. Raised 1" by-pass with lock wing Mueller 300 ball valve.

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel, crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment; all material for paving replacement and any water used for compaction of backfill.

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturer's recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor. Plugs shall be watertight and approved by the company.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using push on joint pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

Prior to construction, the appropriate agency(ies) will be notified as required by the permit(s).

It shall be the Contractor's responsibility to uncover all existing water lines being connected to, and to verify the location, depth and size of pipe before any construction begins.

Any construction performed without the knowledge of the duly authorized representative is liable for removal and replacement at the Contractor's expense.

All fire hydrants, frames, covers and valve boxes, etc. shall be adjusted to finished grade prior to the placing of the asphalt concrete surface course by the Contractor (where applicable).

Air release valves shall be installed at water system high points per Standard Detail E-9-8-2.

All water services shall be set a minimum of two feet (2') on the customer's property, preferably within the P.U.E. and not within right-of-way.

Unless otherwise specified on the construction drawings, all water mains shall be installed five feet (5') from the property line inside the right-of-way or easement.

Water valves shall be spaced not more than five hundred feet (500') in commercial districts and not more than eight hundred feet (800') in other districts. Variations may be required for transmission mains or special applications.

Installation of water line casing shall be per Standard Specification E-9-24-1.

Tracer Wire and Warning Tape are to be installed on all mains, tees, crosses, ells and fire hydrant laterals. They will not be installed on service lines. The tracer wire will be installed on the water main 45 degrees from the vertical centerline of the pipe and shall be taped to the fittings directly and on the main every 10 feet using a minimum 10 mil vinyl tape. The tracer wire shall be placed between the valve riser and box with a minimum of 12" of wire inside. The warning tape shall be installed a minimum of two feet below the surface, being measured from final grade, directly over the center of the pipe. Any splices in the tracer wire shall be joined using waterproof connectors. Any splices in the warning tape shall be joined using minimum 10 mil vinyl tape. The tracer wire shall be tested for continuity after backfill and compaction, but before paving. Any detected damages to the wire shall be repaired before paving will be allowed.

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B

select materials. Bedding material shall be used below and around the pipe and a minimum of twelve inches (12") above the pipe. Shade and bedding material to be mechanically compacted prior to remainder of trench back-fill.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than six inches (6") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200 ± 5 psi at the point of lowest elevation; leakage may not exceed 0.1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter. If dry utilities are not installed, a second pressure test is required.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins. Contractor to follow all conditions of any discharge permit.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

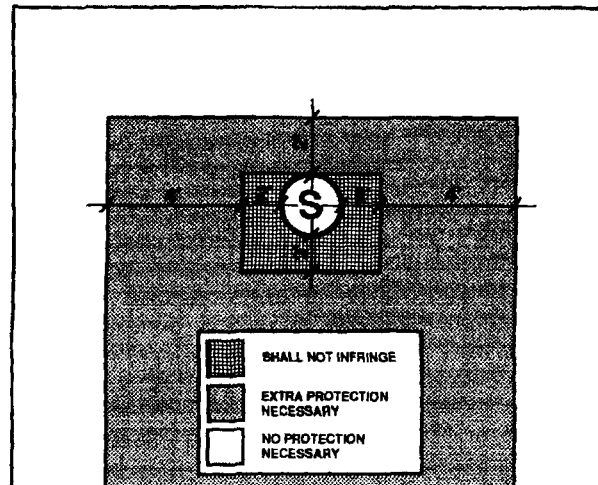
No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

- a. Horizontal - When water lines and sewers are laid parallel with each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



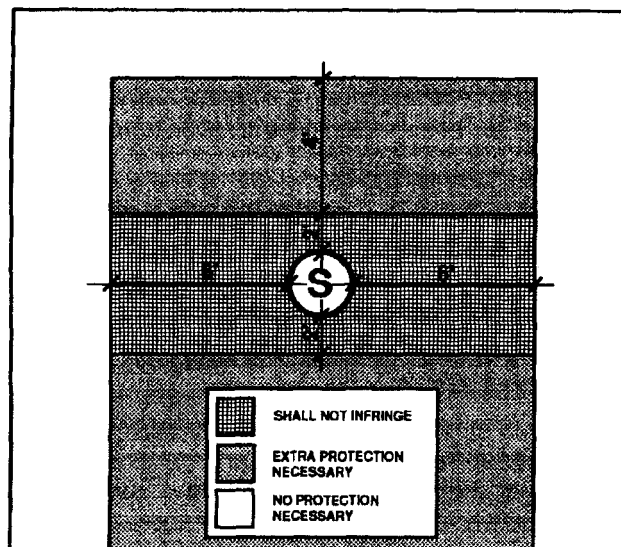
Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

- b. Vertical - When a water main is parallel with or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing both the water main and sewer main in concrete. See Detail E-9-30-1 and E-9-30-2.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

- c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.
- d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.
- e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



- f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:
 - 1. Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.
 - 2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure sewers and force mains at distances greater than twenty feet (20') from drinking water wells.
- g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.
- h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.
- i. Use Mechanical Joint ductile iron pipe with Megalug thrust restraints a minimum of ten (10') feet on each side of a sewer or storm drain crossing.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes, unless authorized by the company. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Push-on type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi. Except for the Coolidge System – See Note 4L.

Maximum joint deflection for 6" mechanical joint ductile iron pipe is seven degrees, seven minutes (7°, 7') or twenty-seven inches (27") per eighteen-foot (18') length pipe, for a maximum curve of one hundred forty-five feet (145').

Maximum joint deflection for 8" and 12" mechanical joint ductile iron pipe is five degrees, twenty-one minutes (5° 21') or twenty inches (20") per eighteen-foot (18') length pipe, for a maximum curve of one hundred ninety-five feet (195').

Maximum joint deflection for 6", 8" and 12" push-on joint ductile iron pipe is five degrees (5°) or nineteen inches (19") per eighteen-foot (18') length pipe for a maximum curve of two hundred five feet (205').

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

November 24, 2010

Mr. Tony Geiger
US Pipe – Waterworks Marketing Consultants
34522 N. Scottsdale Road
Scottsdale, Arizona 85226

Re: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Geiger:

Thank you for your interest in working with Arizona Water Company (the "Company") to add US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the US Pipe product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Sentinel Fire Hydrant:

- Model Sentinel 250
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model US Pipe A-USP0
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2" thru 12"
- Model US Pipe A-USP1
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: marla@azwater.com

ARIZONA WATER COMPANY


To: Tony Geiger – US Pipe
Subject: US Pipe Sentinel Fire Hydrants and Resilient Wedge Gate Valves

November 24, 2010

Page 2

We look forward to developing a long-term relationship with you and the US Pipe products. If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

afh

VIA EMAIL: TGEIGER4@COX.NET

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878 • WWW.AZWATER.COM

October 19, 2010

Mr. Jim Ryan
Clow Valve Company
8121 N. 10th Avenue
Phoenix, Arizona 85021

Re: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Dear Mr. Ryan:

Thank you for your interest in working with Arizona Water Company (the "Company") to add Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves to the Company's material and equipment specifications. Based on the Clow product information you provided and your field presentations to our operations and engineering staff, the Company is pleased to inform you that the following items are approved for use in the Company's water systems in Arizona.

Medallion Fire Hydrant:

- Model F-2545
 - 5¼" MVO
 - 4½" pumper
 - 2½" hose
 - Meets AWWA C-502 standard and approval by ULFM

Resilient Wedge Gate Valves:

- Model 2639 & 2640
 - Meets AWWA C-509 Full Body Cast Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 2½" thru 12"
- Model 2638
 - Meets AWWA C-515 Reduced Wall Ductile Iron includes 304 SS Nuts, Bolts & Low Zinc Bronze Stem
 - Size range 14" thru 48"

E-MAIL: mail@azwater.com

ARIZONA WATER COMPANY

To: Jim Ryan – Clow Valve Company


October 19, 2010

Subject: Clow Medallion Fire Hydrants and Resilient Wedge Gate Valves

Page 2

We look forward to developing a long-term relationship with you and the Clow products.
If I can be of any assistance, please call me.

Very truly yours,



Fredrick K. Schneider
Vice President – Engineering

lar

VIA EMAIL: JIM.RYAN@CLOWVALVE.COM

February 21, 2012

Contractor

Re: Fitting Specifications

Dear Contractor:

Effective March 1, 2012, Arizona Water Company (the "Company") has changed its fitting specifications for Ductile Iron Fittings and Ductile Iron Flanged Fittings ("Fittings"). All Fittings purchased by the Company, on the Company's behalf or installed with the intent of being conveyed to the Company, must comply with the requirements noted below.

Previous Fitting Specifications:

Fittings

Manufactured by Tyler or Union, Crosses, Elbows, Tees, Cap Reducer, Adapter, Plug, Blind Flange and Tapped Flange: Ductile Iron, Class 350, SSB, and Cast Iron Cement Lined.

New Fitting Specification:

Ductile Iron Fittings (Push-On and Mechanical Joint)

Ductile Iron Push-On and Mechanical Joint ("MJ") fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C153/A21.53 for compact design and ANSI/AWWA C110/A21.10 for full body design. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness cement mortar lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. MJ fittings with flanged end(s) will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. All fittings shall be NSF-61 listed for use with potable water.

Ductile Iron Flanged Fittings

E-MAIL: mail@azwater.com

Ductile Iron flanged fittings for water lines shall be made of ductile iron per ASTM A536 and be cast in the United States of America. Fittings shall have USA cast on the fitting to designate they are made in the United States. All fittings will be manufactured and tested in accordance with ANSI/AWWA C110/A21.10 design. Flange ends will match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. In accordance with ANSI/AWWA C104/A21.4 fittings 2" – 3" will be single thickness lined and 4" – 64" will be cement mortar lined. Fittings will be Asphaltic seal coated on the exterior in accordance with ANSI/AWWA C104/A21.4. All fittings shall be NSF-61 listed for use with potable water.

If you have any questions or require further information, please contact me at 602-240-6860.

Very truly yours,



Fredrick K. Schneider, PE
Vice President - Engineering
engineering@azwater.com

afh
Enclosure

ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS: E-9-1

ERRATA 2010

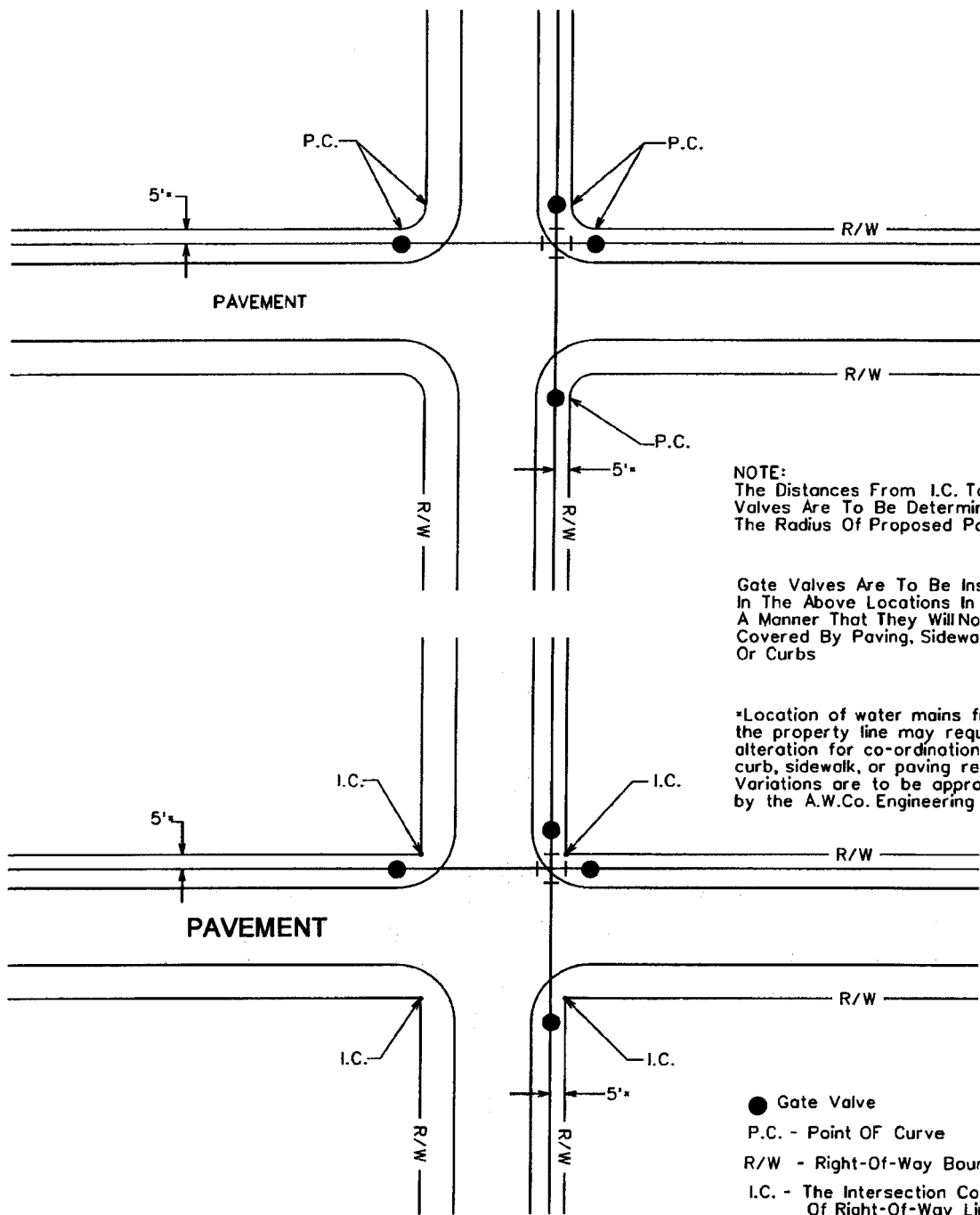
ARIZONA WATER COMPANY

STANDARD SPECIFICATION DRAWINGS - DUCTILE IRON

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E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL GATE VALVE LOCATIONS

DRAWN BY: CCO

APPROVED BY: M.W.

DATE: 3/20/86

△ 1/31/2001

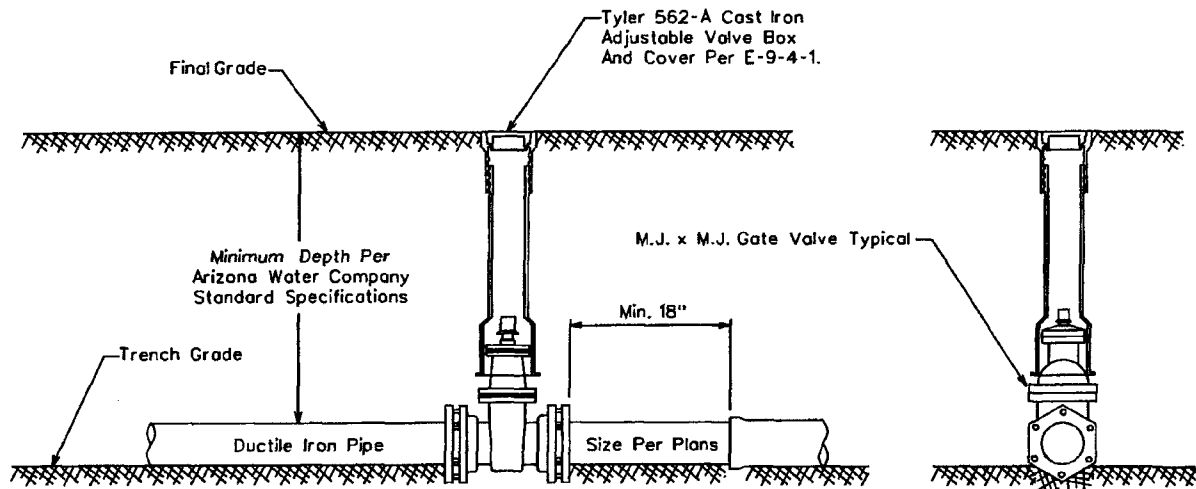
E-9-1-1

FOR 6" THROUGH 12" GATE VALVES

Mueller Resilient Wedge Gate Valves
Catalog Number A-2360-__
ANSI/AWWA C509 Compliant

FOR 14" THROUGH 16" GATE VALVES

Mueller Resilient Wedge Gate Valves
Catalog Number A-2361-__
ANSI/AWWA C509 Compliant



All Valves Installed On Pipe Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL VERTICAL GATE VALVES

DRAWN BY:

CB

APPROVED BY:

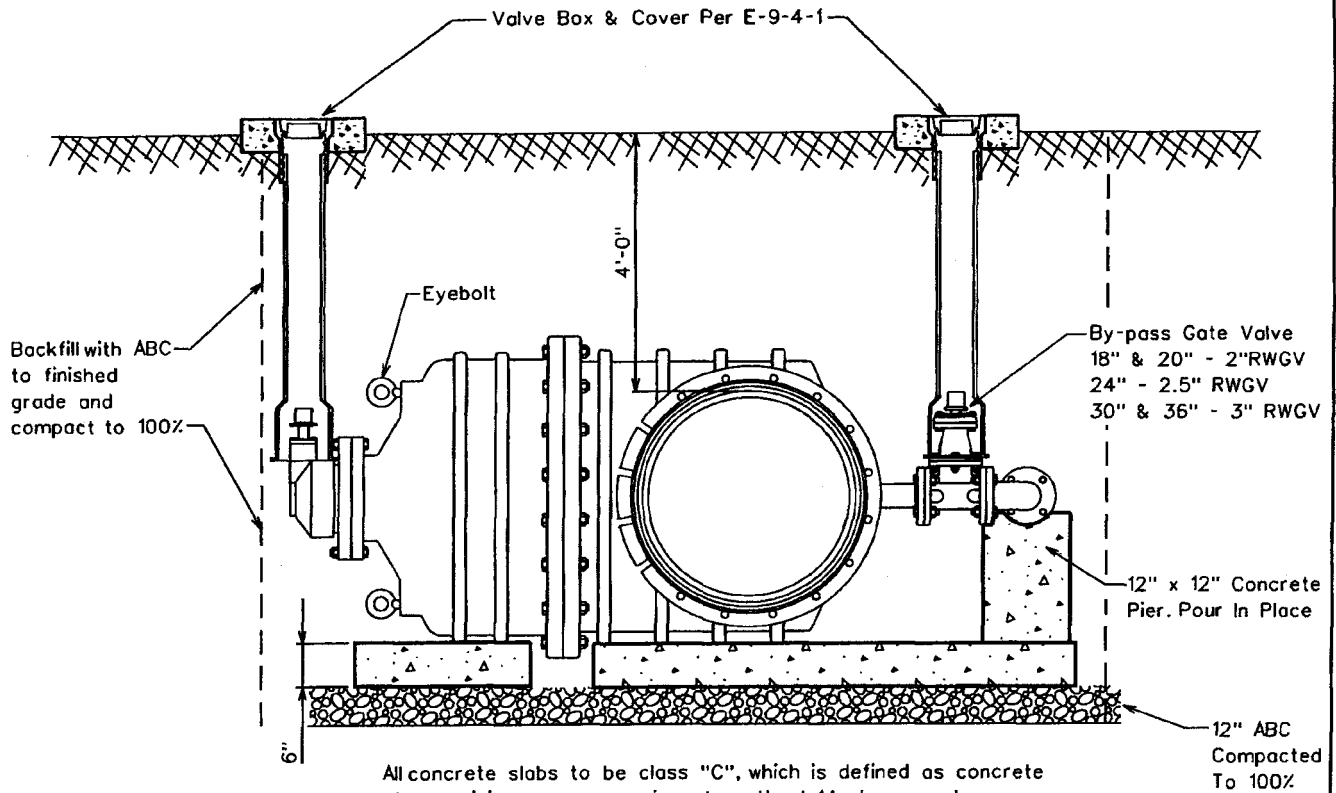
MW

DATE:

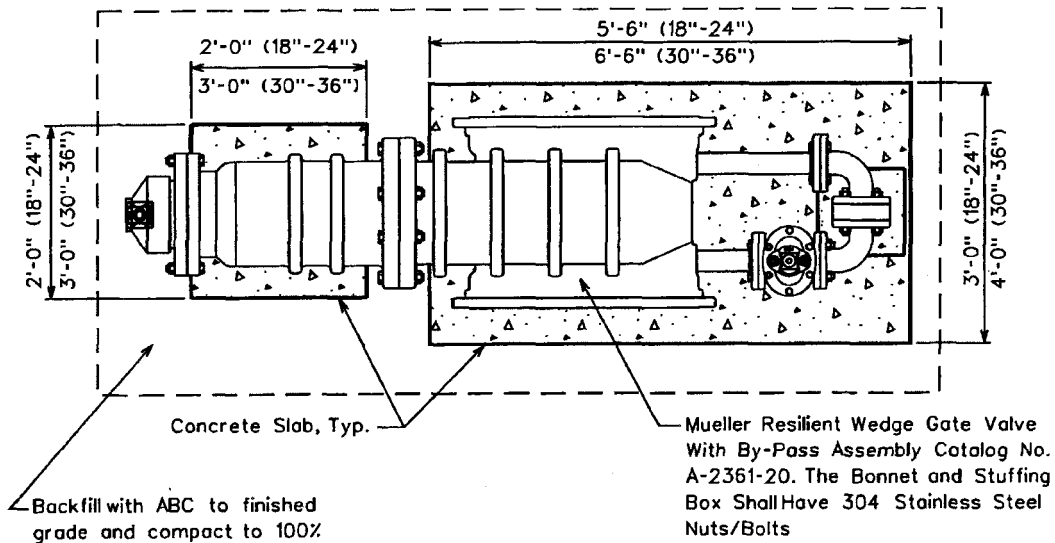
03.20.1986

△ 08.23.2006

E-9-2-1



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No. A-26441. The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITH BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY:

CB

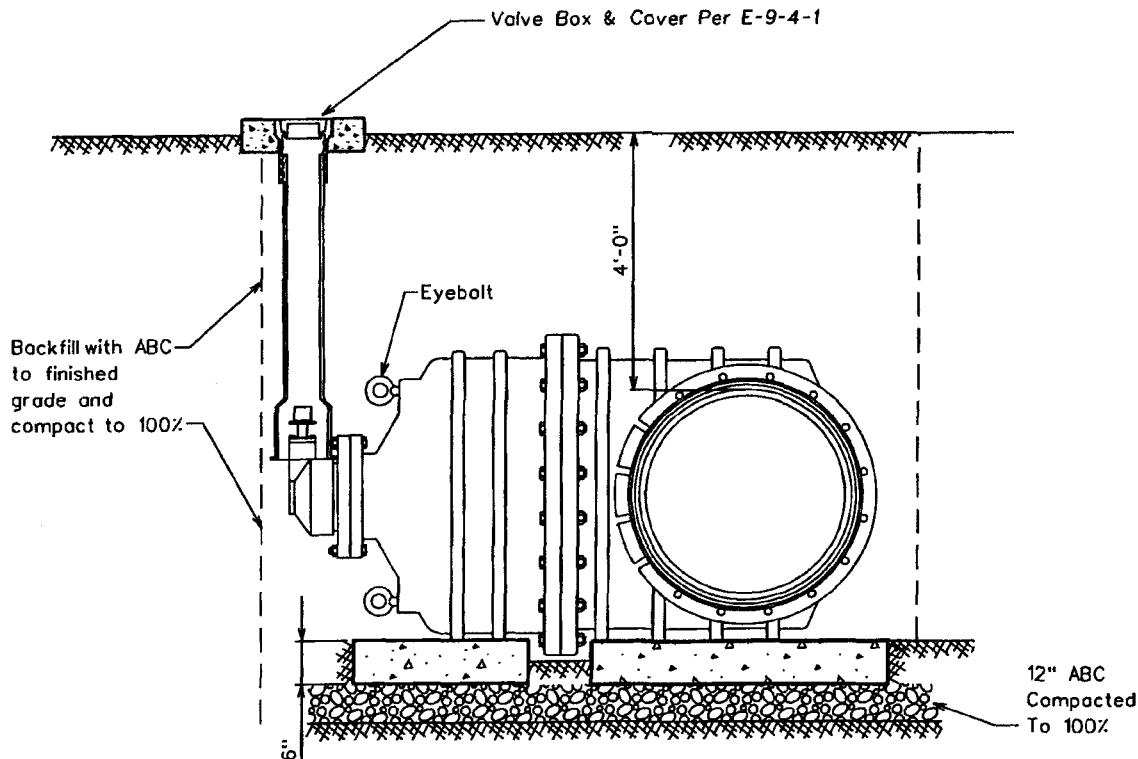
APPROVED BY:

DATE

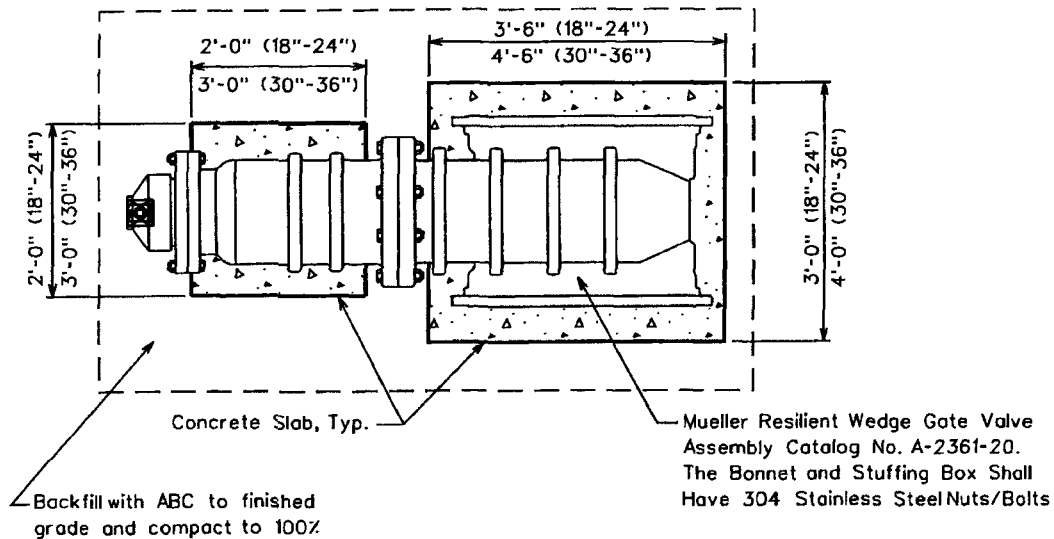
12.07.2004



E-9-2-2



All concrete slabs to be class "C", which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi, per MAG Section 725, Table 725-1. Slabs to be formed and poured prior to valve installation.



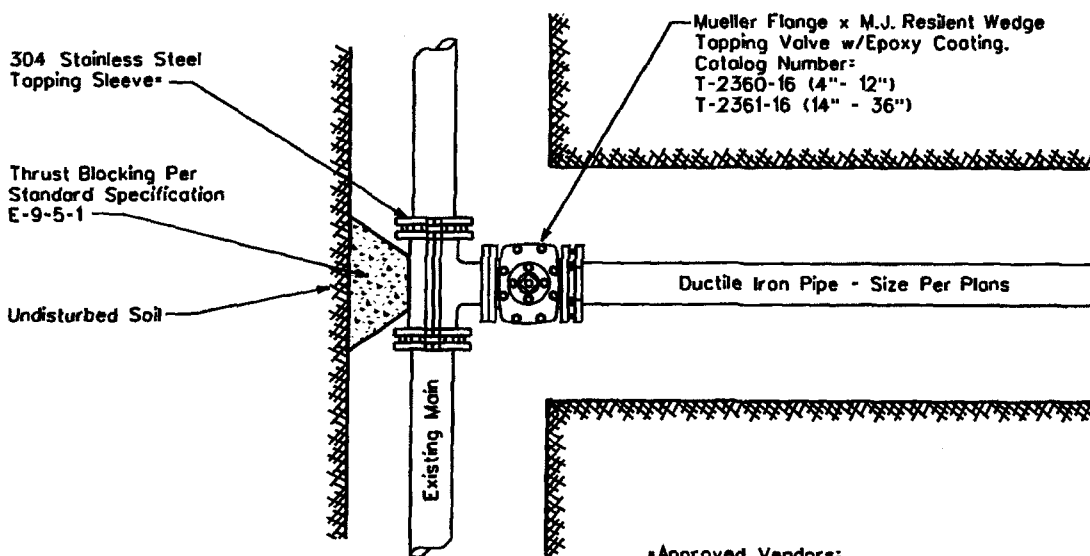
All valves installed on pipe five feet and greater are to be installed with a valve operator extension Mueller catalog No.A-26441 The distance is measured from the top of the operating nut to final grade.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

INSTALLATION OF BEVEL GEARED HORIZONTAL GATE VALVES WITHOUT A BY-PASS FOR 18" AND LARGER VALVES

DRAWN BY: CB	APPROVED BY:	DATE: 12.07.2004	△ 5.13.2005	E-9-2-3
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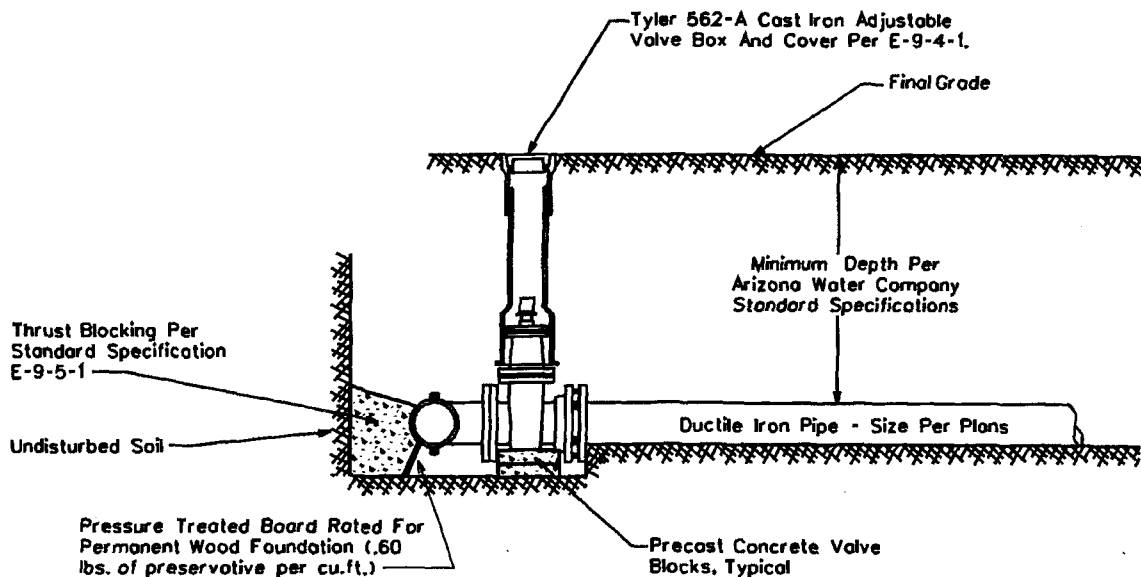


NOTE:

1. All flanges, bolts, and nuts shall be kept free of concrete.
2. Air pressure test the topping sleeve before the live tap is made.
3. Polywrap all new fittings

***Approved Vendors:**

Mueller, Catalog No. H304, 304 Stainless Steel
 JCM, Model 432, 304 Stainless Steel
 Romac, 'SST', 304 Stainless Steel
 Cascade, 'CST-EX', 304 Stainless Steel



ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL TAPPING SLEEVE AND VALVE

DRAWN BY:

CB

APPROVED BY:

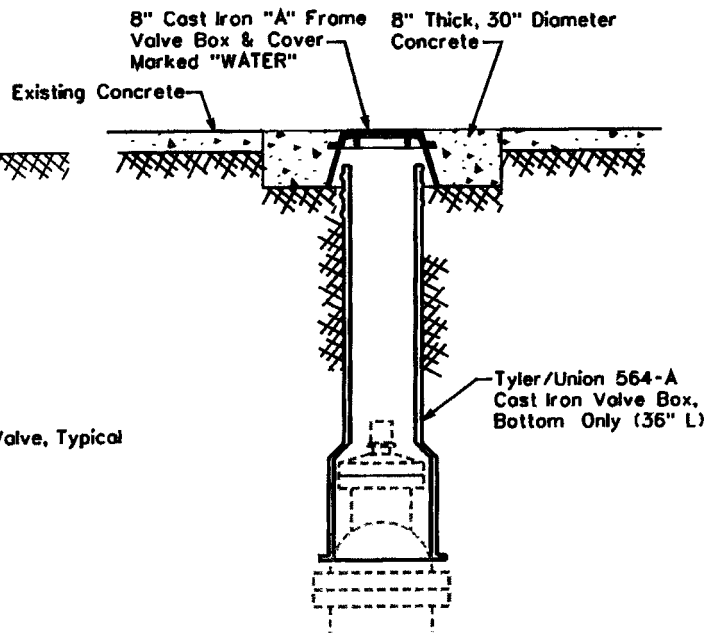
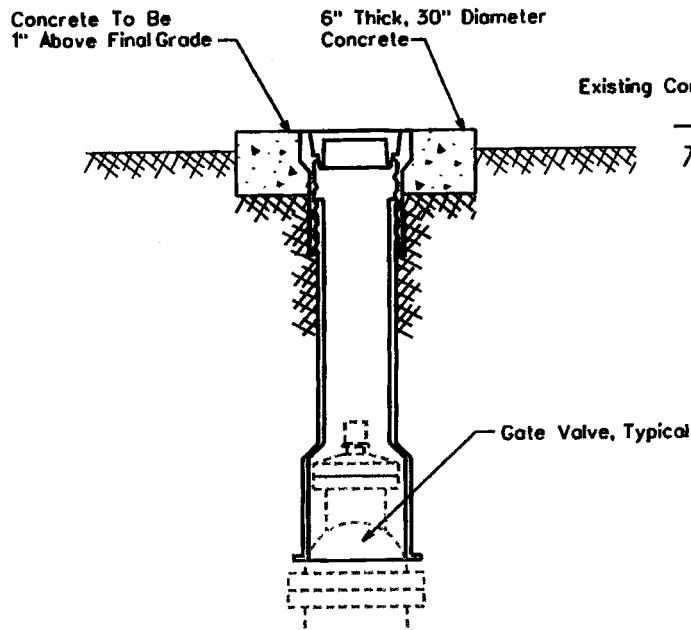
MW

DATE:

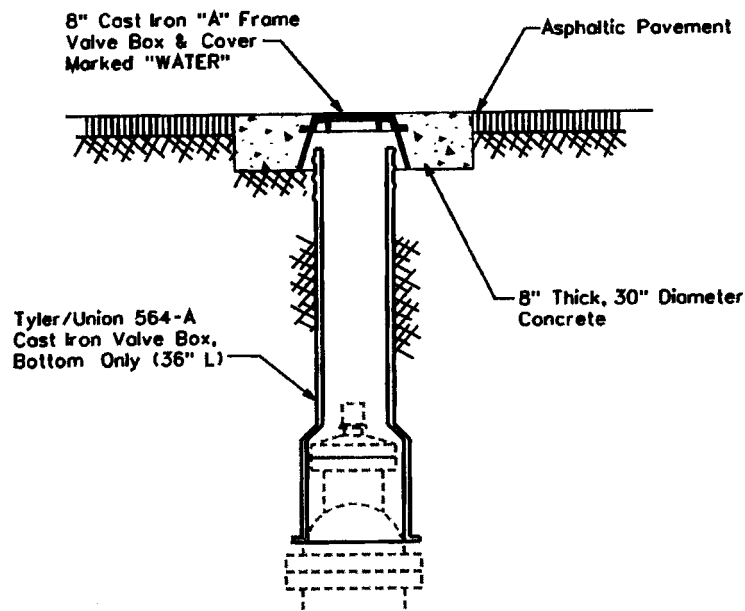
03.20.1986

△ 08.23.2006

E-9-3-1



CONCRETE VALVE BOX
For Areas Subject To Vehicular Traffic



ASPHALT VALVE BOX
For Areas Subject To Vehicular Traffic

NOTE:

1. The Valve Box Shall Be Adjusted To Finished Grade Prior To Placing Of Asphalt And/Or Concrete.
2. For Non-Traffic Areas Use Tyler/Union 562-A, Two-Piece, 6855 Series Or Equivalent Adjustable Cast Iron Valve Box And Cover. Valves 4" To 12"
- For Traffic Areas, Use Tyler/Union 564-A Bottom Section Only With An 8" Cast Iron "A" Frame With Cover. Valves 4" To 12"
3. All Valves Installed Five Feet (5') Deep And Greater Are To Be Installed With A Valve Operator Extension, Mueller Catalog No. A-26441 And Shall Have A Debris Cap
4. Use Minimum Class 'C' Concrete which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.

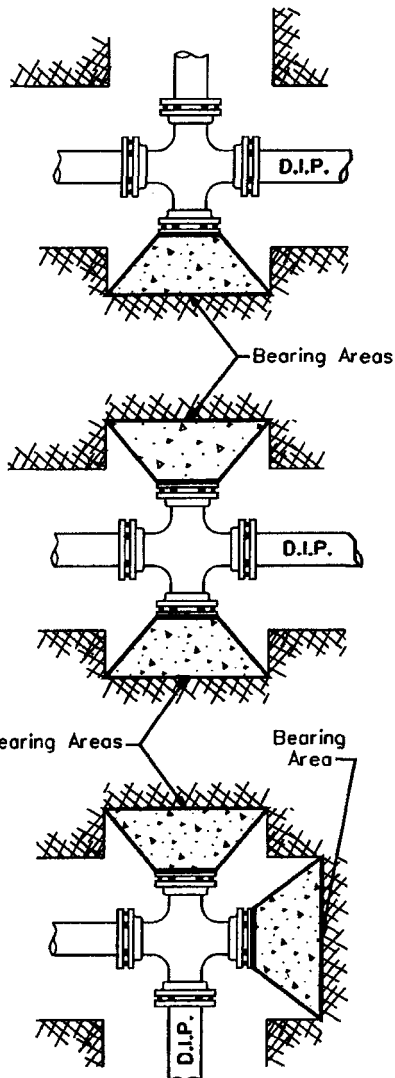
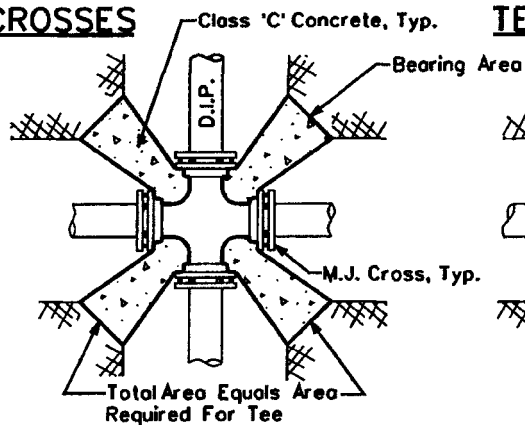
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

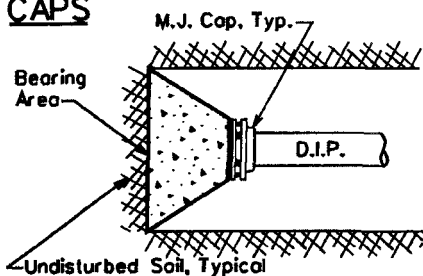
**TYPICAL VALVE SUBJECT TO NON-VEHICULAR
AND VEHICULAR TRAFFIC**

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 8.24.2006	E-9-4-1
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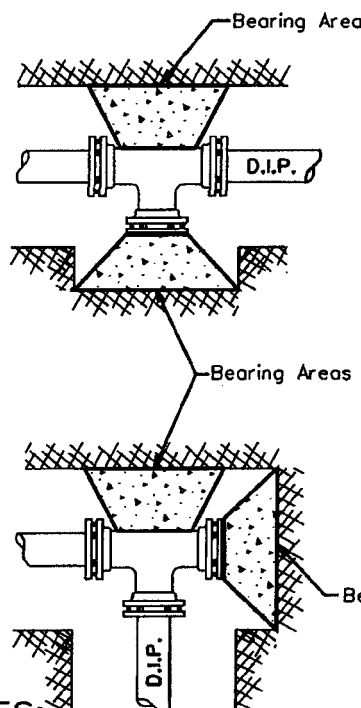
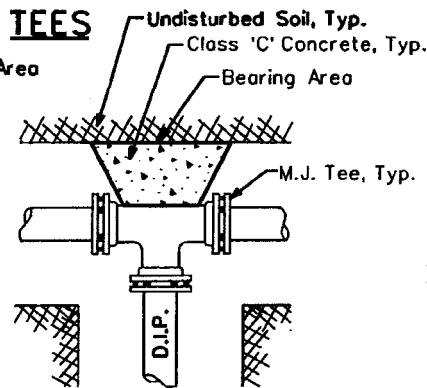
CROSSES



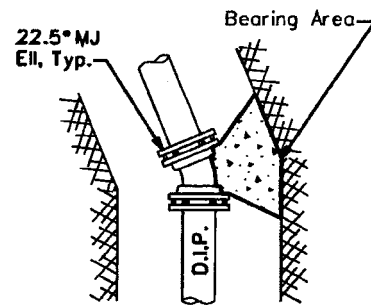
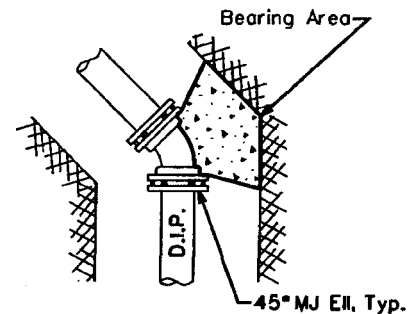
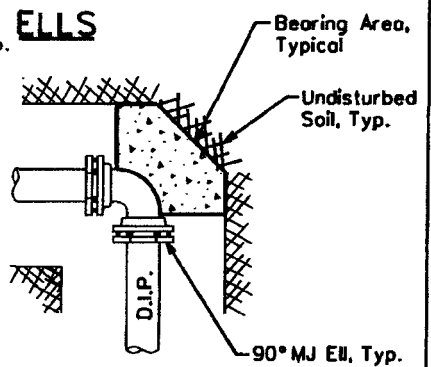
CAPS



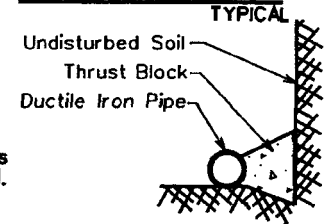
TEES



ELLS



CROSS SECTION



NOTES:

1. Use minimum Class 'C' concrete, which is defined as concrete whose minimum compressive strength at 14 days reaches 1600psi and at 28 days reaches 2000psi. per MAG Section 725, Table 725-1.
2. Thrust blocks are to bear on undisturbed earth with minimum bearing area as shown. If not undisturbed, areas will be increased as required.
3. Place the pressure treated form board in front of all plugs before pouring thrust blocks.
4. Form all non-bearing areas to prevent any concrete from entering any joint.
5. All flanges, bolts and nuts shall be kept free of concrete.
6. Center the bearing area on the pipe centerline and force line.
7. All pipe fittings to be wrapped with polyethylene pipe wrap prior to thrust block installation. (where applicable)

THRUST BLOCK SCHEDULE

PIPE SIZE	TEE, 45°, AND 22.5° ELLS, & PLUGS	90° ELLS
6" And Under	4 Sq.Ft.	6 Sq.Ft.
8"	6 Sq.Ft.	9 Sq.Ft.
12"	13 Sq.Ft.	20 Sq.Ft.
16"	23 Sq.Ft.	32 Sq.Ft.
18" And Larger	Calculated Per Project	

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL THRUST BLOCKING SCHEDULE

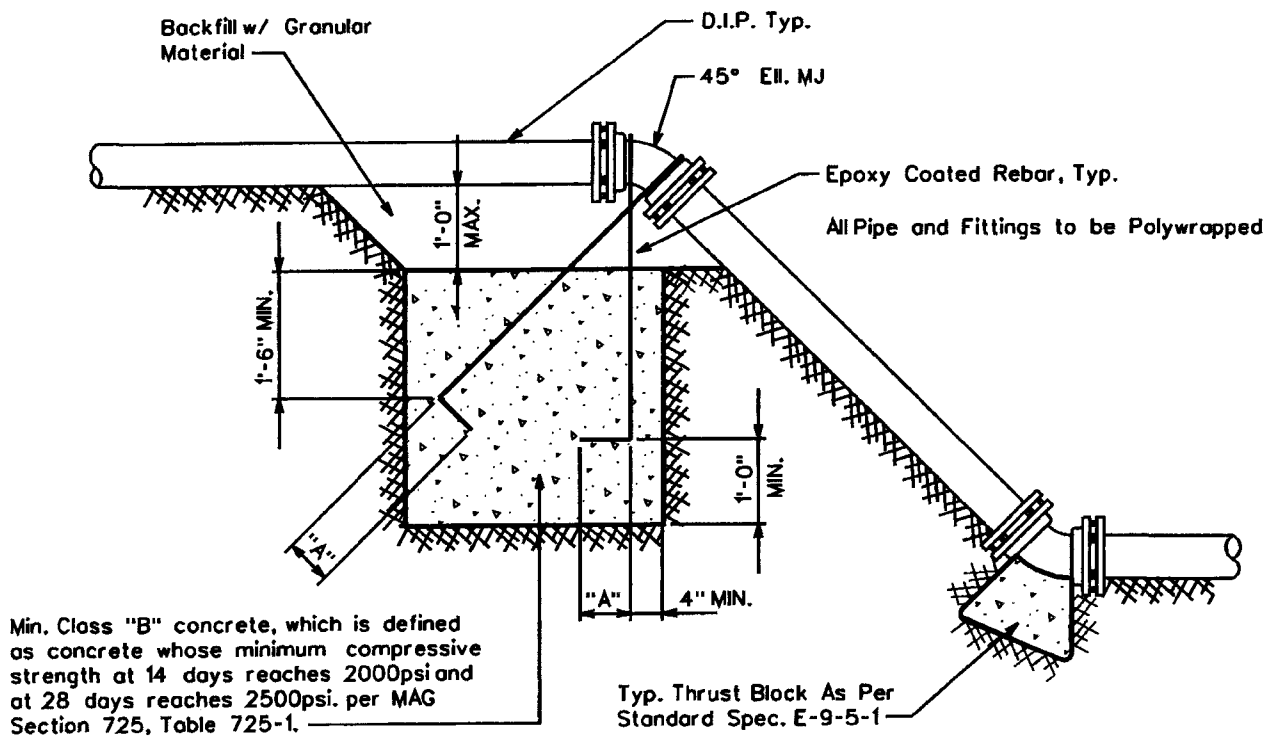
DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 05.27.2005	E-9-5-1
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NOTES

1. Bars In Conc. Thrust Block To Be Coated w/ 2 Coats CoolTar Epoxy or by Other Approved Method.
2. Bars To Have 90° Hook @ Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	* Min. Block Dimension (WxHxL)
6"	*6	6"	3'x3'x3'
8"	*6	9"	4'x3'x4'
12"	*8	9"	5'x4'x5'
16"	*9	12"	7'x6'x7'

* For 125 P.S.I. Working Pressure



ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

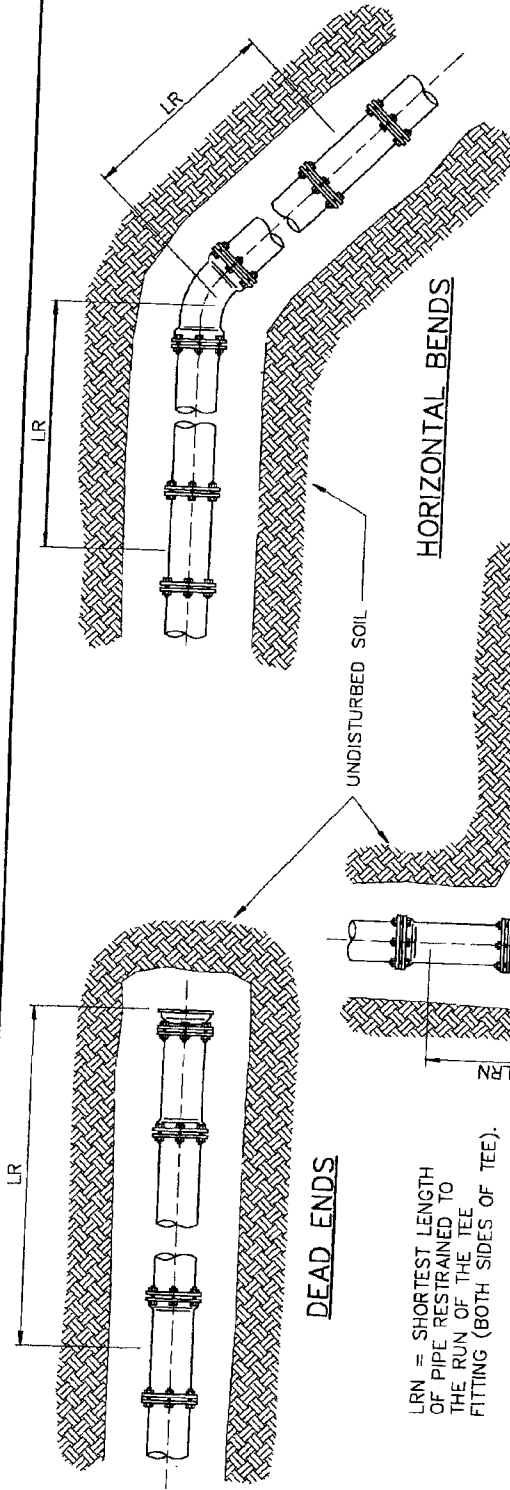
DRAWN BY: JPK

APPROVED BY: MJW

DATE: 7-5-96

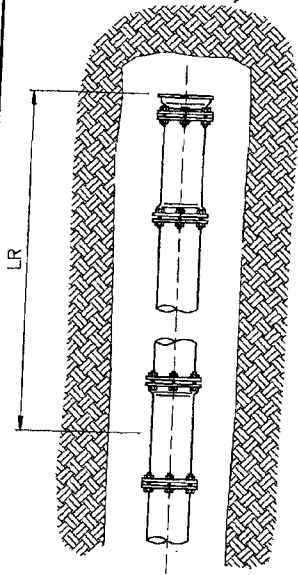
△ 01.16.2007

E-9-5-2



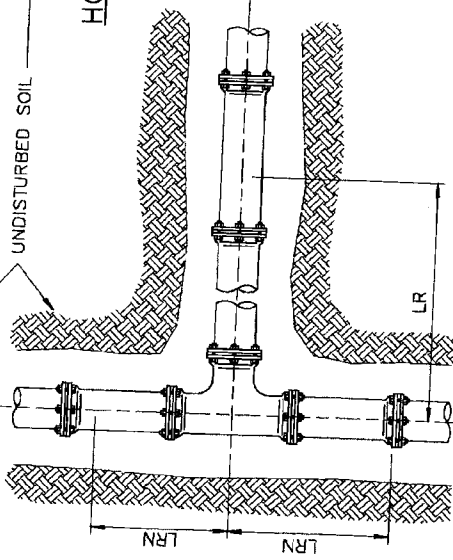
HORIZONTAL BENDS

UNDISTURBED SOIL

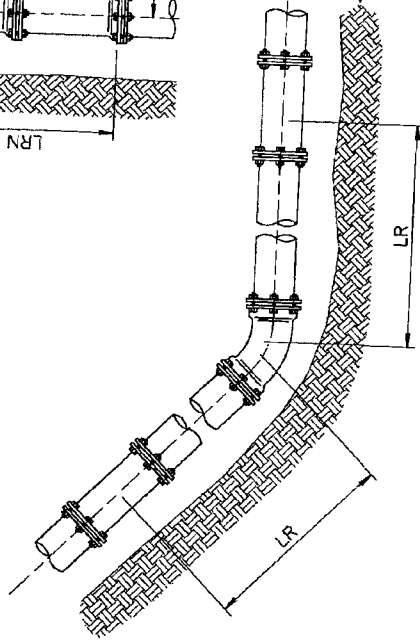


DEAD ENDS

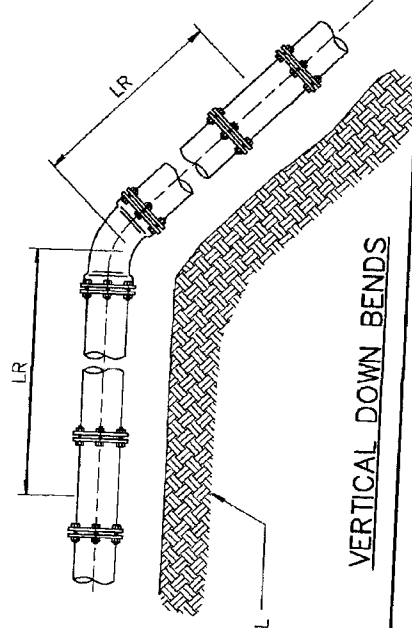
LRN = SHORTEST LENGTH OF PIPE RESTRAINED TO THE RUN OF THE TEE FITTING (BOTH SIDES OF TEE).



TEES



VERTICAL UP BEND



VERTICAL DOWN BENDS

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

DRAWN BY: CB	APPROVED BY: MW	DATE: 01.16.2007	△	E-9-5-3-1
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RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE

NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS						DEAD ENDS
	22-1/2"			LRN=0'	LRN=10'	90° BEND FITTINGS		45° BEND FITTINGS		22-1/2" BEND FITTINGS		
	90°	45°	22-1/2"			DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND	
4	18	7	4	30	8	31	18	13	7	6	3	31
6	25	10	5	43	20	44	25	18	10	9	5	44
8	32	13	6	56	34	58	32	24	13	11	6	58
10	38	16	8	68	45	69	38	29	16	14	8	69
12	45	19	9	80	57	81	45	34	19	16	9	81
14	51	21	10	91	68	92	51	38	21	18	10	92
16	57	24	11	103	79	104	57	43	24	21	11	104
18	62	26	12	113	90	115	62	48	26	23	12	115
20	68	28	14	125	100	126	68	52	28	25	14	126
24	79	33	16	145	121	147	79	61	33	29	16	147

RESTRAINED LENGTHS, LR, FOR DUCTILE IRON PIPE WITH POLYETHYLENE WRAP

NOMINAL PIPE SIZE INCHES	HORIZONTAL BENDS			TEES		VERTICAL OFFSETS						DEAD ENDS
	22-1/2"			LRN=0'	LRN=10'	90° BEND FITTINGS		45° BEND FITTINGS		22-1/2" BEND FITTINGS		
	90°	45°	22-1/2"			DOWN BEND	UP BEND	DOWN BEND	UP BEND	DOWN BEND	UP BEND	
4	26	11	5	69	18	72	26	30	11	14	5	72
6	36	15	7	99	47	102	36	42	15	20	7	102
8	47	19	9	130	78	133	47	55	19	26	9	133
10	56	23	11	157	103	159	56	66	23	32	11	159
12	65	27	13	185	131	187	65	77	27	37	13	187
14	74	31	15	211	156	214	74	89	31	42	15	214
16	82	34	16	238	183	241	82	100	34	48	16	241
18	90	37	18	263	207	266	90	110	38	53	18	266
20	98	41	20	289	233	292	98	121	41	58	20	292
24	113	47	22	337	280	340	113	141	47	68	22	340

NOTES:

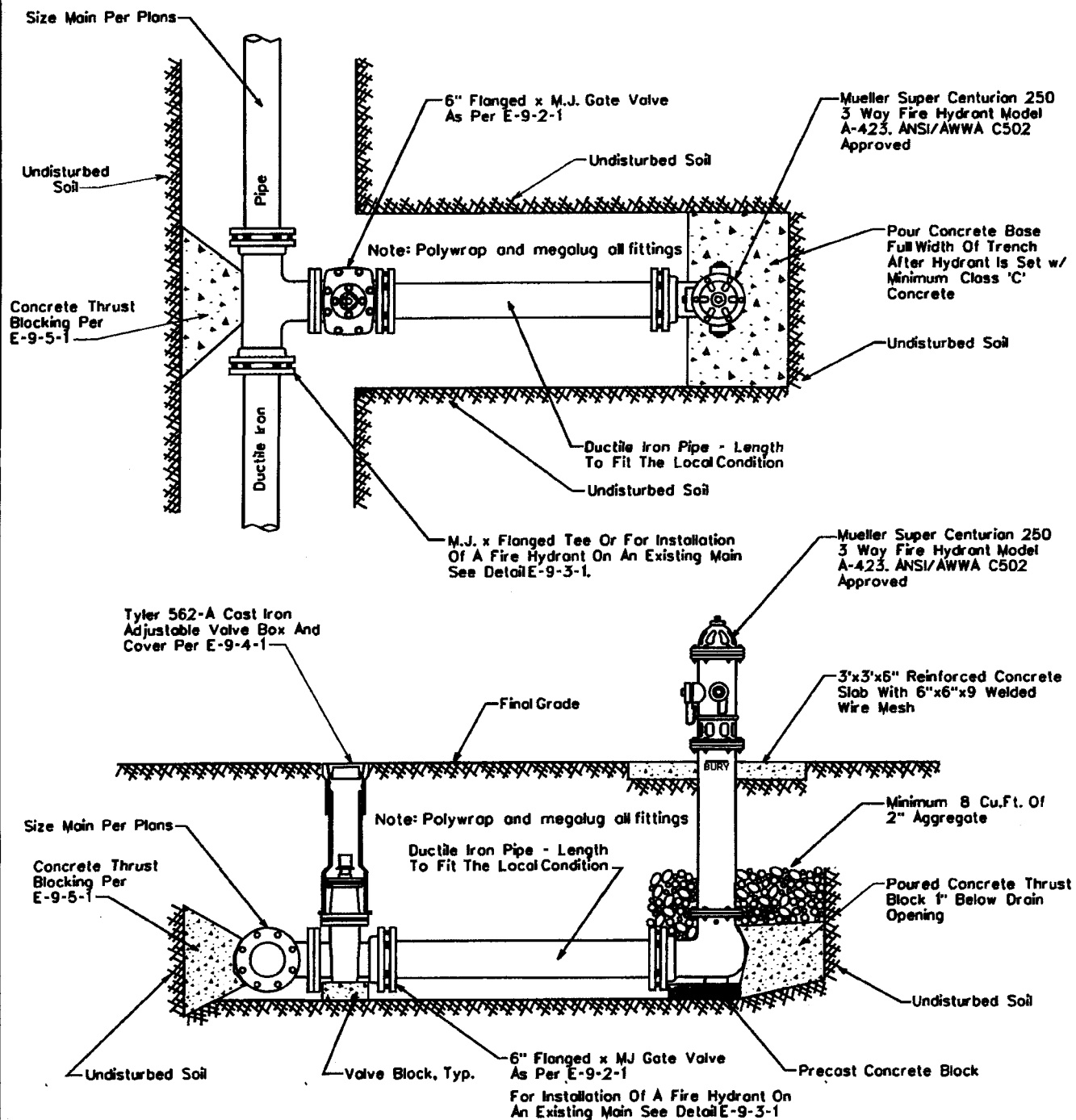
1. ALL JOINTS WITHIN THE SPECIFIED LENGTH LR MUST BE RESTRAINED.
ALL LENGTHS ARE GIVEN IN FEET.
2. THE MAXIMUM TEST PRESSURE SHALL NOT EXCEED 200 PSI
3. THE MINIMUM DEPTH OF BURY SHALL BE 3' TO TOP OF PIPE.
4. RESTRAINED LENGTHS MAY BE REDUCED WHEN SUPPORTED BY ENGINEERING CALCULATIONS.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

JOINT RESTRAINT FOR NEW DUCTILE IRON AND C-900 PVC MAINS

DRAWN BY: CB	APPROVED BY: MW	DATE: 01.16.2007	△	E-9-5-3-2
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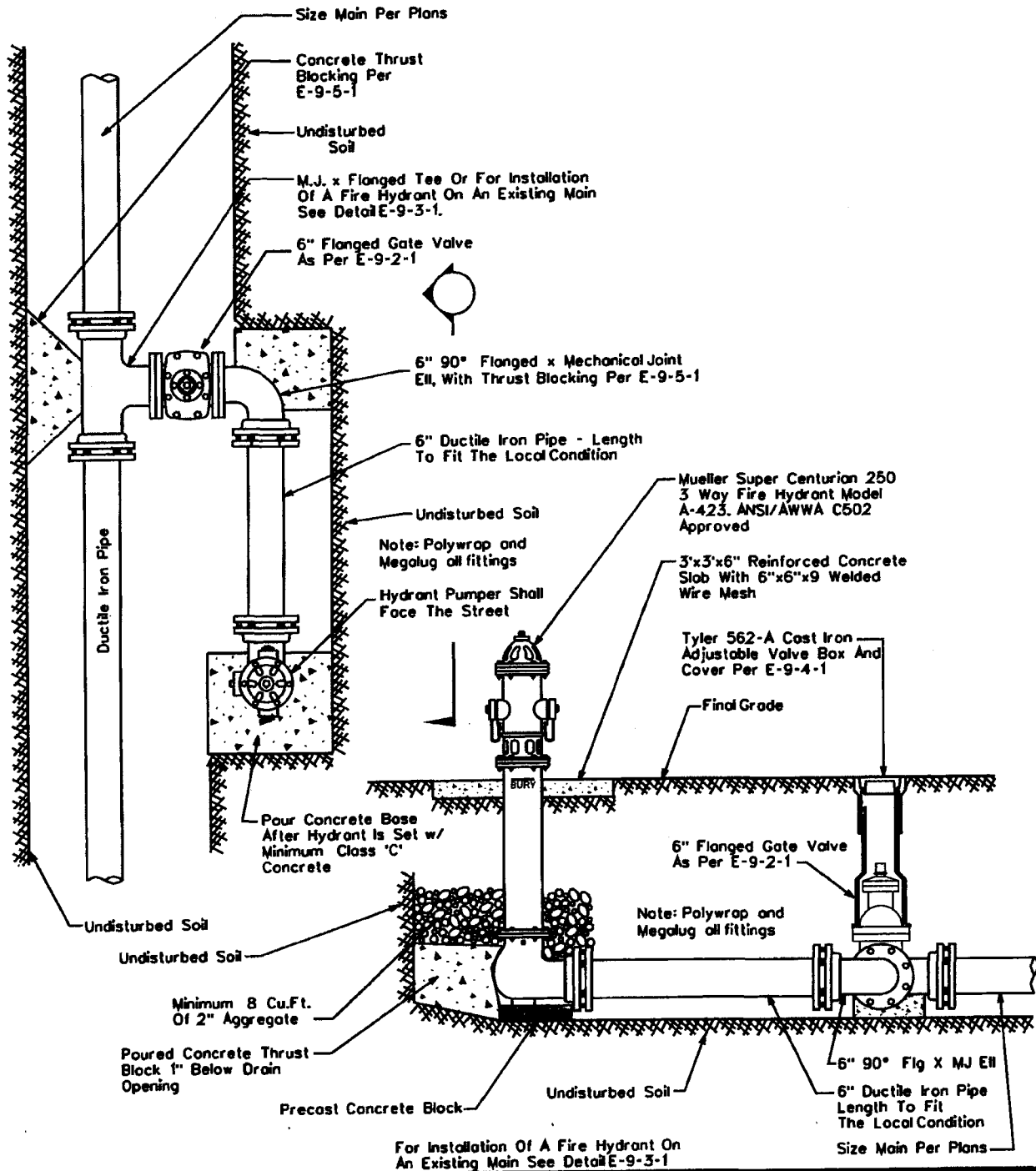
NOTE: All Flanges, Bolts, Nuts and Drain Holes Shall Be Kept Free Of Concrete

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL PERPENDICULAR FIRE HYDRANT

DRAWN BY: CB	APPROVED BY: MW	DATE: 1-28-91	08.24.2006	E-9-6-1
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NOTE: All Flanges, Bolts, Nuts And Drain Holes Shall Be Kept Free Of Concrete.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL PARALLEL FIRE HYDRANT

DRAWN BY:

JW

APPROVED BY:

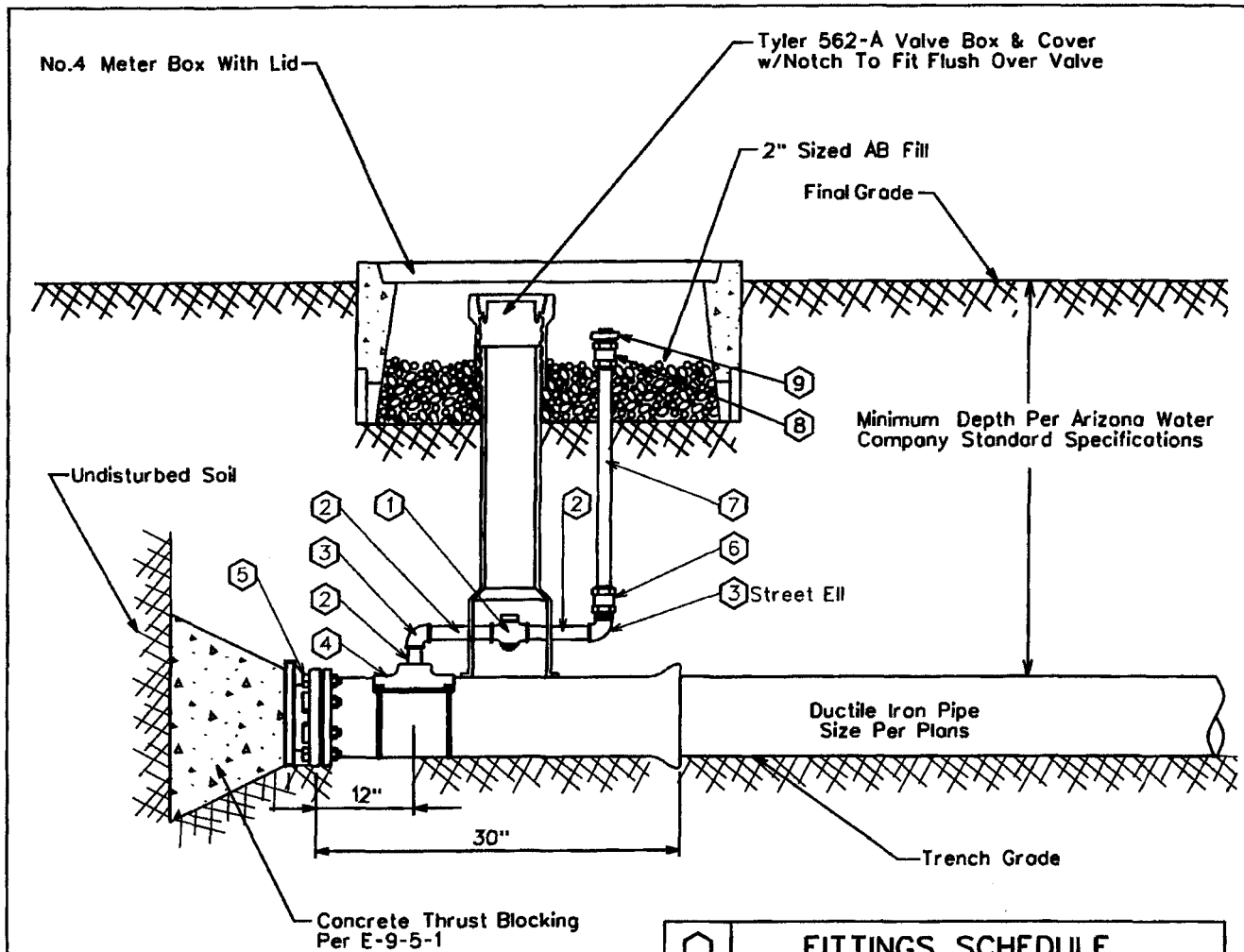
MW

DATE:

03.20.1986

△ 08.24.2006

E-9-7-1



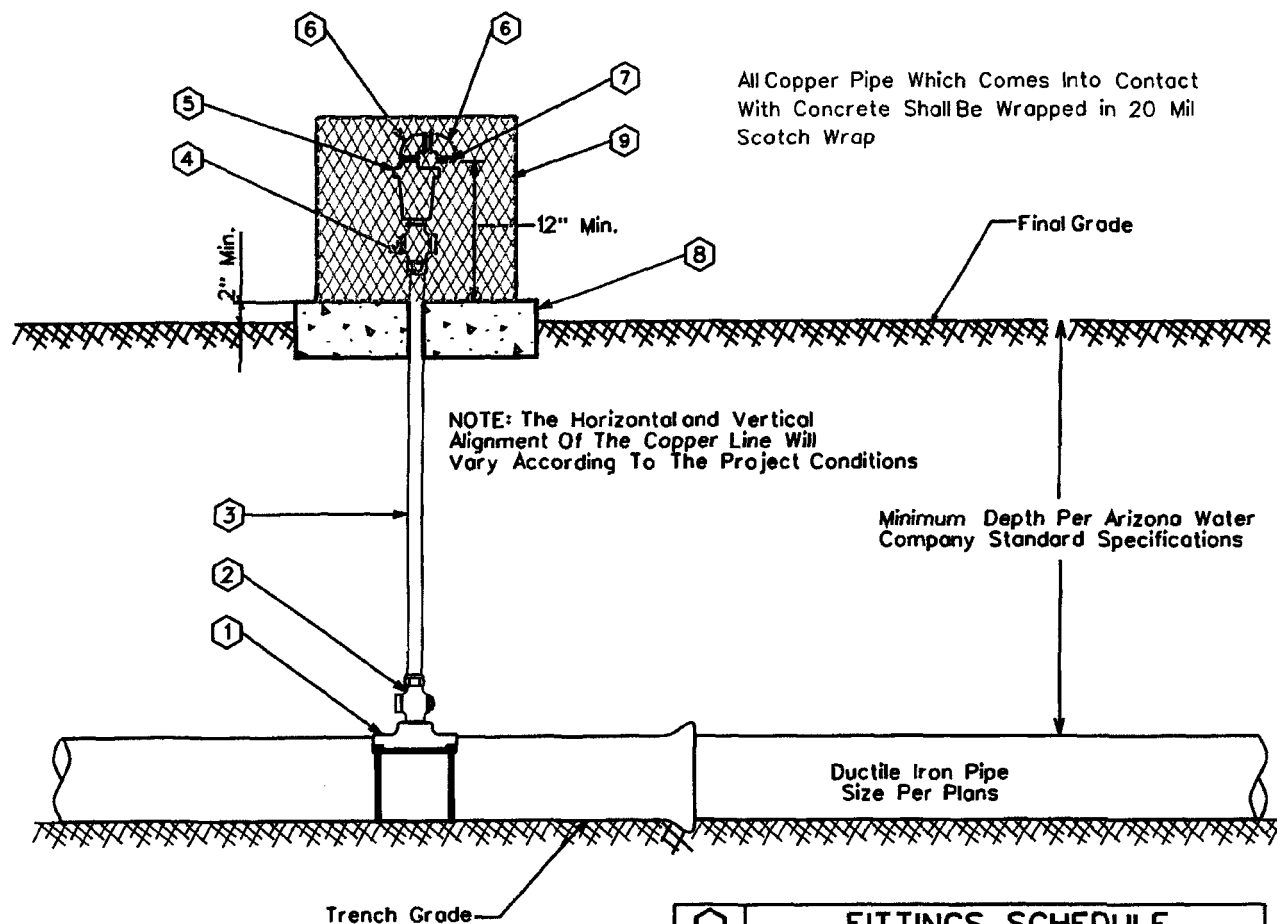
⬡	FITTINGS SCHEDULE
1.	2" Mueller 300 Ball Curb Valve B-20283 FIP x FIP W/ 2" Mueller Brass Square Wrench Nut Adapter B-20299
2.	2" Brass Nipple - Length To Fit Field Conditions
3.	2" Brass 90° Elbow, IPST
4.	Mueller Double Strap Bronze Service Saddle - BR2B
5.	M.J. Plug - Megalug Restraints May Be Required
6.	2" Straight Coupling CC x FIP H-15451
7.	2" Copper Pipe
8.	2" Straight Coupling CC x MIP H-15428
9.	2" Square Head Plug, MIP

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

2" BLOWOFF ASSEMBLY

DRAWN BY: CB	APPROVED BY: MW	DATE: 03.20.1986	△ 03.21.2006	E-9-8-1
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GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{3}{4}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within right-of-way or easement.

F	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	1" Type 'K' Copper w/NO Splices - Field Fit
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	Crispin 1" Air Release Valve, Model AR10
6.	$\frac{1}{2}$ " Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corroddible)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Guordshack, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan

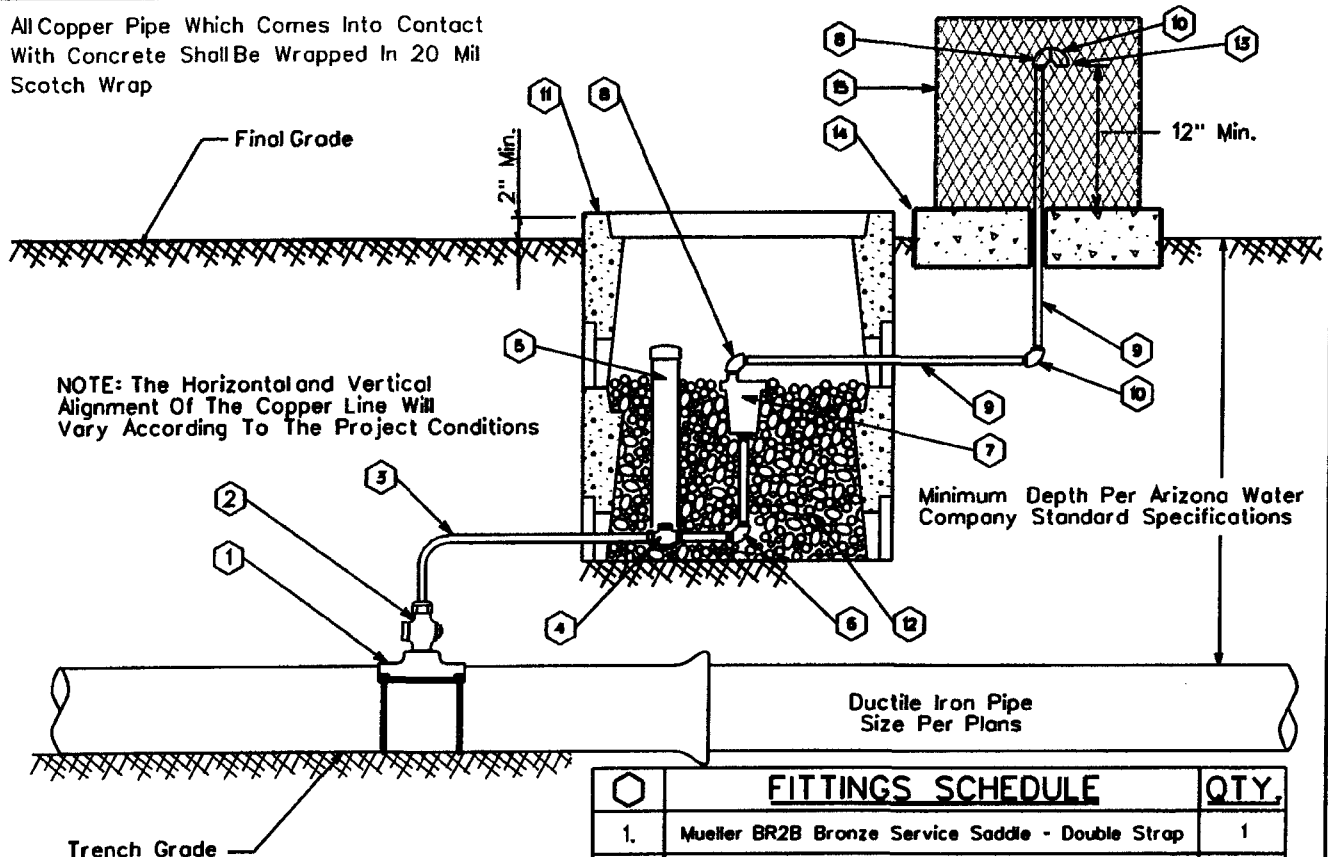
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL AIR RELEASE VALVE

DRAWN BY: CB APPROVED BY: MW DATE: 03.20.1997 08.24.2006 E-9-8-2

All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped In 20 Mil Scotch Wrap



GENERAL NOTES:

1. The valve shall be installed at high points and on long runs to vent the accumulation of air with the line under pressure- see the construction plans for specific locations.
2. The valve shall have a $\frac{5}{16}$ " orifice with valve sealing faces of stainless steel and BUNA-N rubber.
3. The valve shall be Crispin model AR10 for 6" and larger water mains.
4. Crispin model AR10 valve construction consists of a 1" IPST inlet & $\frac{1}{2}$ " IPST outlet, cast iron body and top flange with stainless steel float and trim.
5. The air release assembly shall be located out of the path of traffic but within the right-of-way or easement.

○	FITTINGS SCHEDULE	QTY.
1.	Mueller BR2B Bronze Service Saddle - Double Strap	1
2.	1" Mueller B-25008 Taper x Comp. Ball Corp Stop	1
3.	1" Type 'K' Copper w/NO Splices - Field Fit	As Req'd
4.	1" Mueller B-25028 IP x Comp. Ball Corp Stop	1
5.	3" PVC Pipe w/ Cop (Loose Fit)	1
6.	1" x 4" Brass Nipple w/90° Elbow	1
7.	Crispin 1" Air Release Valve, Model AR10	1
8.	$\frac{1}{2}$ " Brass Street Elbow	2
9.	$\frac{1}{2}$ " Galvanized Pipe - Length as req'd	2
10.	$\frac{1}{2}$ " Galvanized 90° Ell	2
11.	Number 1 Meter Box	2
12.	2" Sized AB (Fill Meter Box To The Top Of The Air Release Valve)	As Req'd
13.	No.16 Wire Mesh Screen (Non-Corrosible)	1
14.	4" Thick Concrete Pad - Class 'C' Concrete	1
15.	Guardshack, Model GS-1, Available From BFDI, Inc. Available In Leaf Green Or Desert Tan	1

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

AIR RELEASE VALVE FOR THE NORTHERN REGION

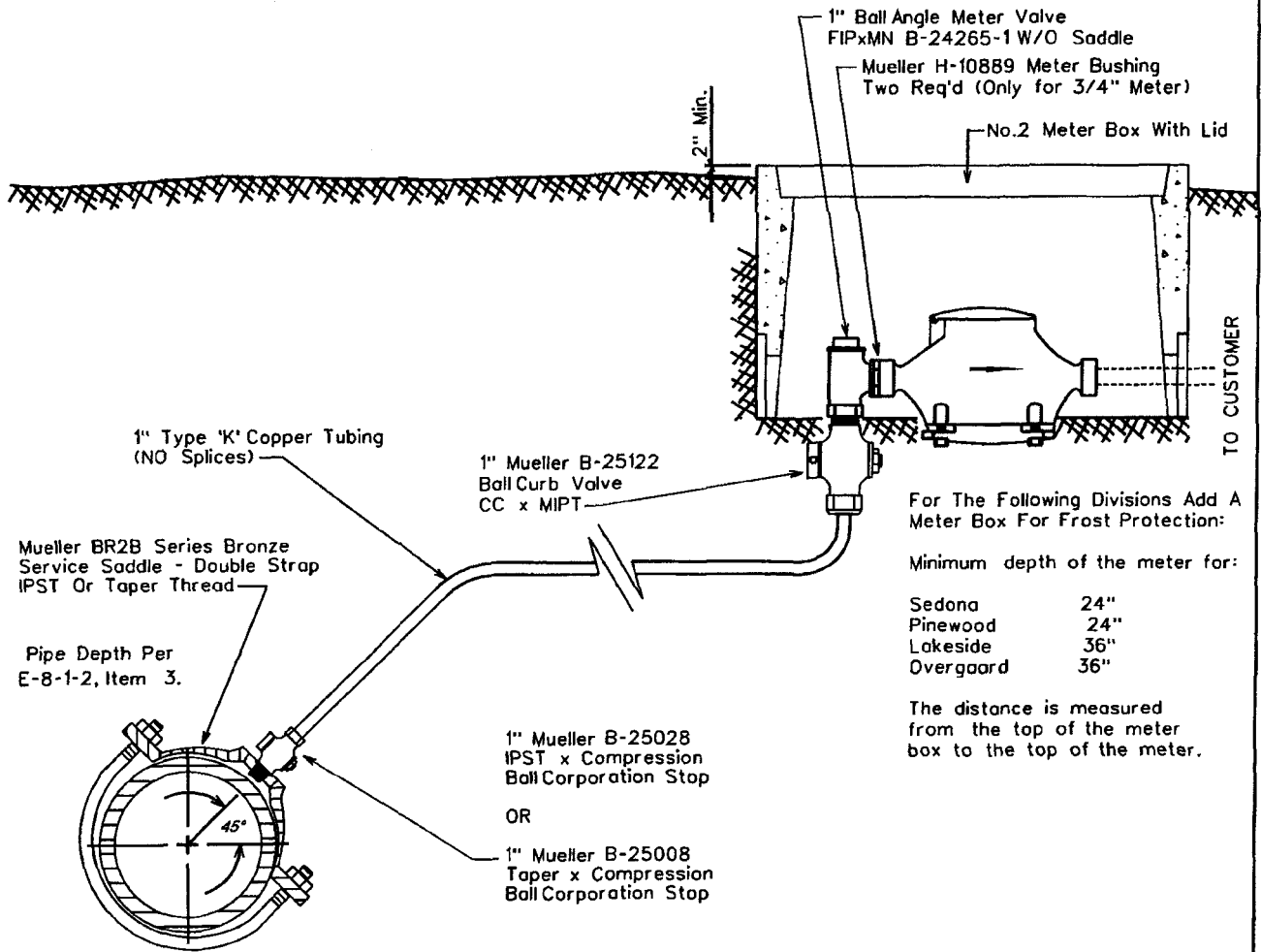
DRAWN BY: CB

APPROVED BY: MW

DATE: 03.20.1997

△ 08.24.2006

E-9-8-3



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
taps on mains other than ductile iron is 12"

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SINGLE SERVICE CONNECTION FOR A 3/4" OR 1" METER

DRAWN BY:

CCO

APPROVED BY:

M.W.

DATE:

3/20/86

03.17.2006

E-9-9-1

For The Following Divisions Add A
Meter Box For Frost Protection:

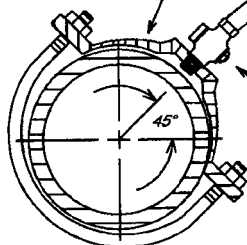
Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top
of the meter box to the top of the meter.

Mueller BR2B Series Bronze
Service Saddle - Double Strap
IPST Or Taper Thread

Pipe Depth Per
E-8-1-2, Item 3.



SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

No.2 Meter Box With Lid
Mueller H-10889 Meter Bushing
Two Req'd Per Meter

1" Ball Angle Meter Valve
B-24265-1 FIPxMTR
W/O Saddle

1" Ball Straight Meter Valve
B-25170 CCxFIP
(To allow for meter valve
replacement)

1" Type 'K' Copper Tubing
(NO Splices)

1" Mueller B-25028
IPST x Compression
Ball Corporation Stop

OR

1" Mueller B-25008
Taper x Compression
Ball Corporation Stop

2" Min.

See note for the
minimum depth
requirements for
frost protection

1"x 1"x 13.5" Straight U-Branch
Mueller H-15364
MIP Inlet x MIP Outlet

1" Brass 90° Street Ell

TO CUSTOMER

TO CUSTOMER

TO CUSTOMER

NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

DOUBLE SERVICE CONNECTION FOR 3/4" METERS

DRAWN BY: CCO	APPROVED BY: M.W.	DATE: 3-20-86	△ 08.25.2006	E-9-10-1
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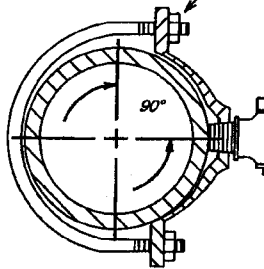
For The Following Divisions Add A
Meter Box For Frost Protection:

Minimum depth of the meter for:

Sedona	24"
Pinewood	24"
Lakeside	36"
Overgaard	36"

The distance is measured from the top
of the meter box to the top of the meter.

Mueller BR2B Series Bronze
Service Saddle - Double Strap
IPST Or Taper Thread



Pipe Depth Per
E-8-1-2, Item 3.

2" Type 'K' Copper Tubing
(NO Splices)

2" Mueller B-25028
IPST x Compression
Ball Corporation Stop

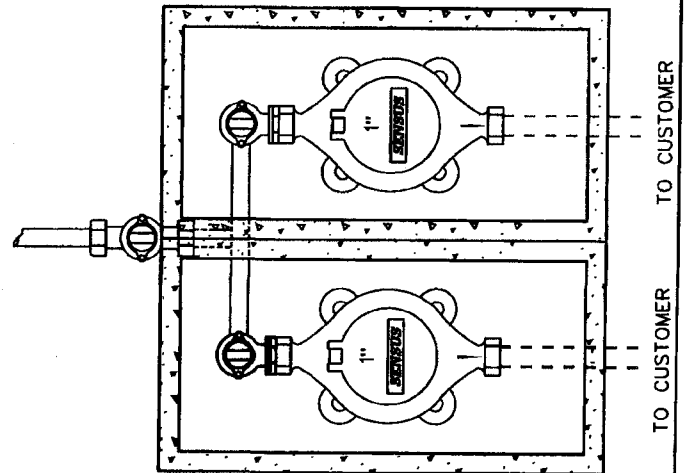
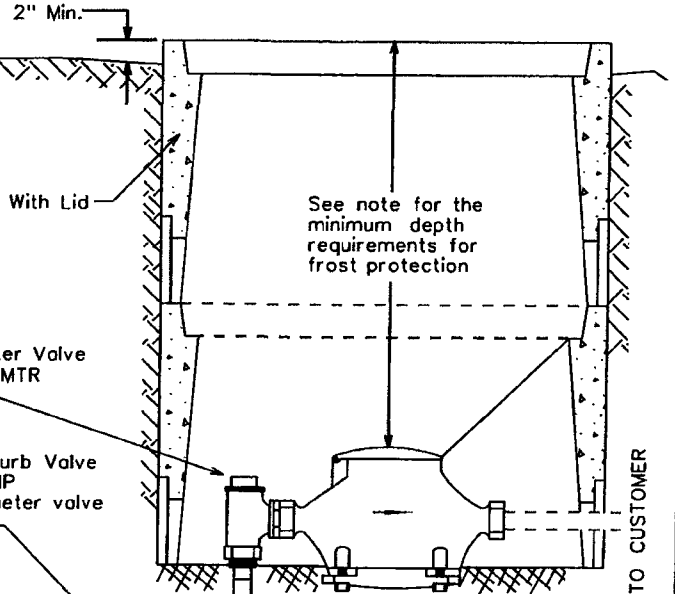
OR

2" Mueller B-25008
Taper x Compression
Ball Corporation Stop

SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between
service taps on mains other than ductile
iron is 12"

NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET



NOTE:
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

DOUBLE SERVICE CONNECTION FOR 1" METERS

DRAWN BY:

CB

APPROVED BY:

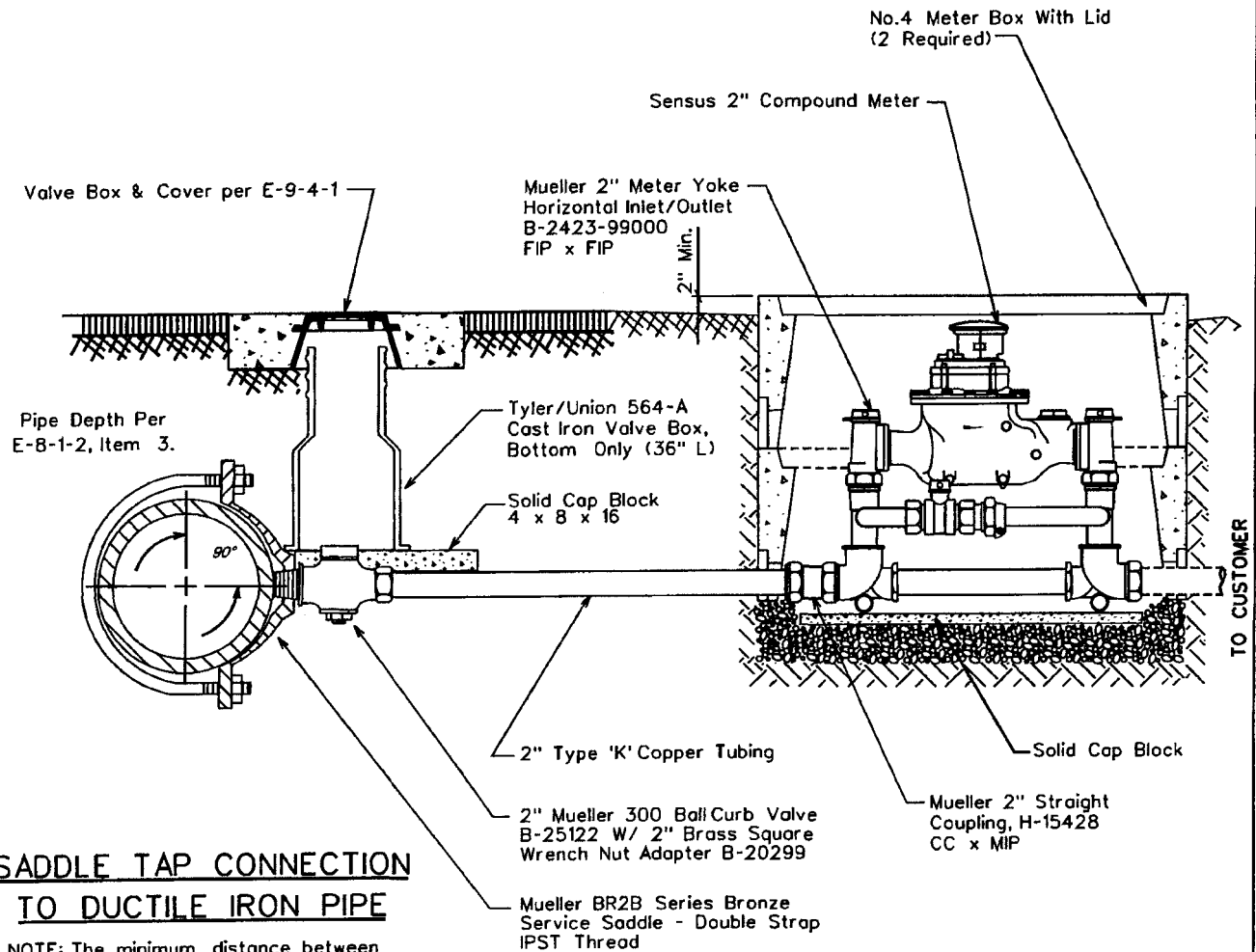
M.W.

DATE

03.17.2006

△ 08.29.2006

E-9-10-2



SADDLE TAP CONNECTION TO DUCTILE IRON PIPE

NOTE: The minimum distance between service taps on mains other than ductile iron is 12"

NOTE: THE LENGTH OF SERVICE IS LIMITED TO
COMMERCIALY AVAILABLE ROLLS, TYPICALLY
60 FEET

NOTE:

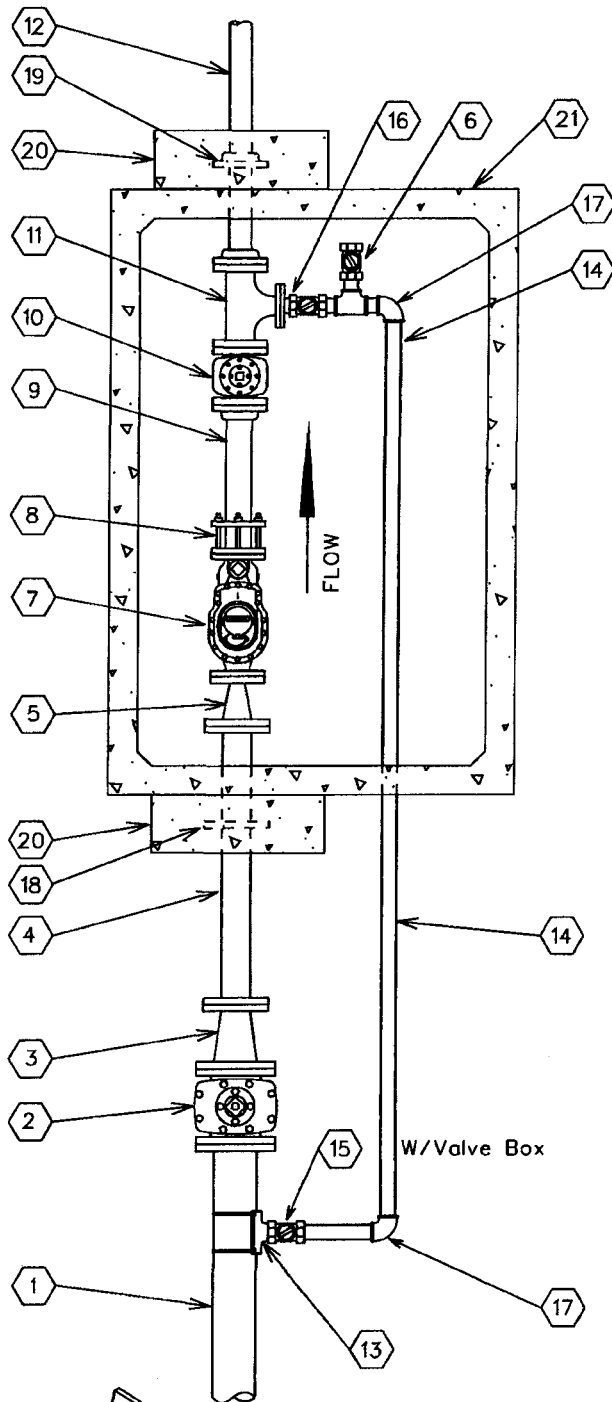
Only the meter is supplied by
Arizona Water Company

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTIONS

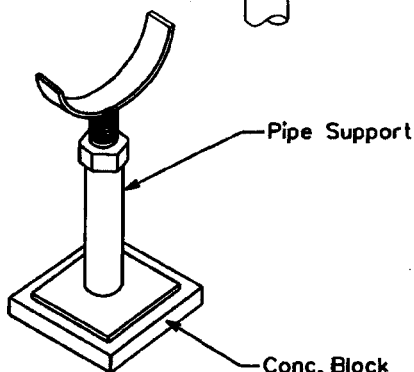
DRAWN BY: JW	APPROVED BY: M.W.	DATE: 3/20/86	△ 08.29.2006	E-9-11-1
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. m.j x flng
3.	6"x4" Reducer flng x m.j
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	4" x 3" Reducer flng
6.	2" Test Port
7.	3" Compound Meter
8.	3" F.C.A.
9.	3"x2'-0" D.I. Spool flng x pe
10.	3" Gate Valve flng
11.	3"x2" Flg Tee w/ 2" Companion Flange
12.	3"x4'-0" D.I. Spool flng x pe
13.	6"x2" Tapping Saddle
14.	2" Copper Pipe
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	2" Locking Ball Valve (normally closed)
17.	2" Mueller H-15526 90° Ell CC x CC
18.	4" Megalug
19.	3" Slip-On Welding Flange
20.	24"x24"x8" Conc. Thrust Block P.I.P.
21.	575-LA Conc. Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

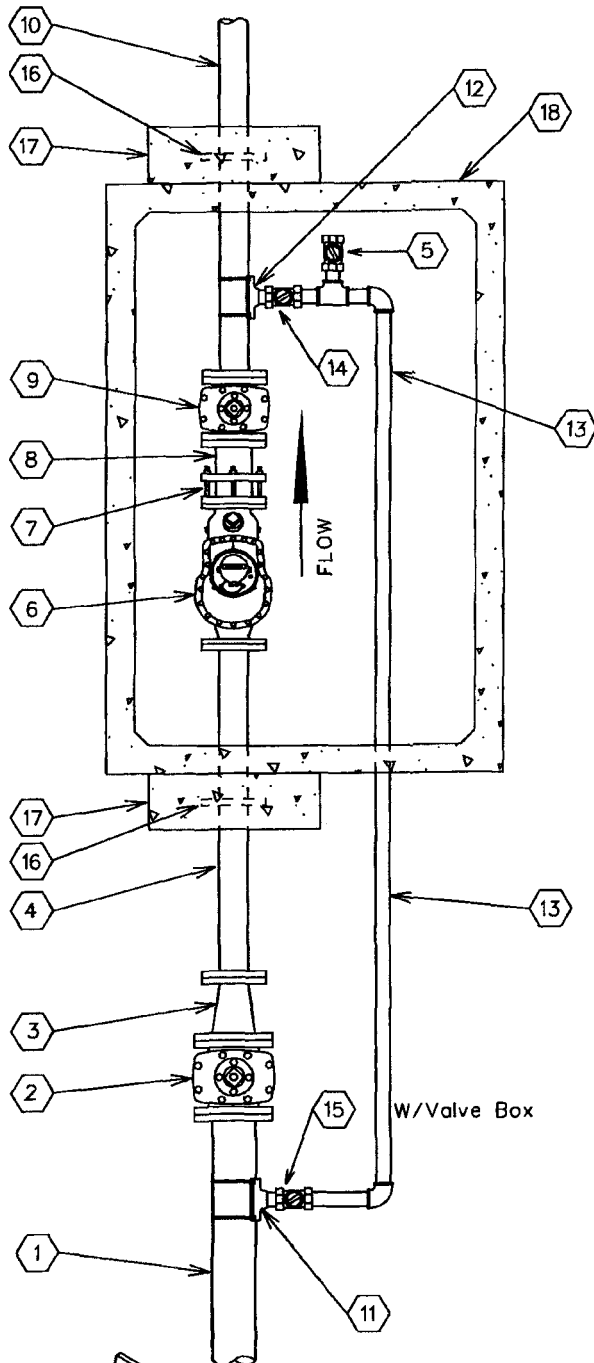


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

3" COMPOUND METER

DRAWN BY:	CCO	APPROVED BY:	MW	DATE:	10/5/1993	△08.29.2006	E-9-12-1
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" Reducer flng x mj
4.	4"x3'-0" D.I.P. Spool flng x pe
5.	2" Test Port
6.	4" Compound Meter
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. Spool flng x pe
9.	4" Gate Valve flng
10.	4"x4'-0" D.I.P. Spool flng x pe
11.	6"x2" Tapping Saddle
12.	4"x2" Tapping Saddle
13.	2" Copper Pipe
14.	2" Ball Valve / Locking (Normally Closed)
15.	2" Mueller B25122 Ball Valve w/B20299 Nut
16.	4" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.
18.	575-LA Conc. Vault

NOTE:

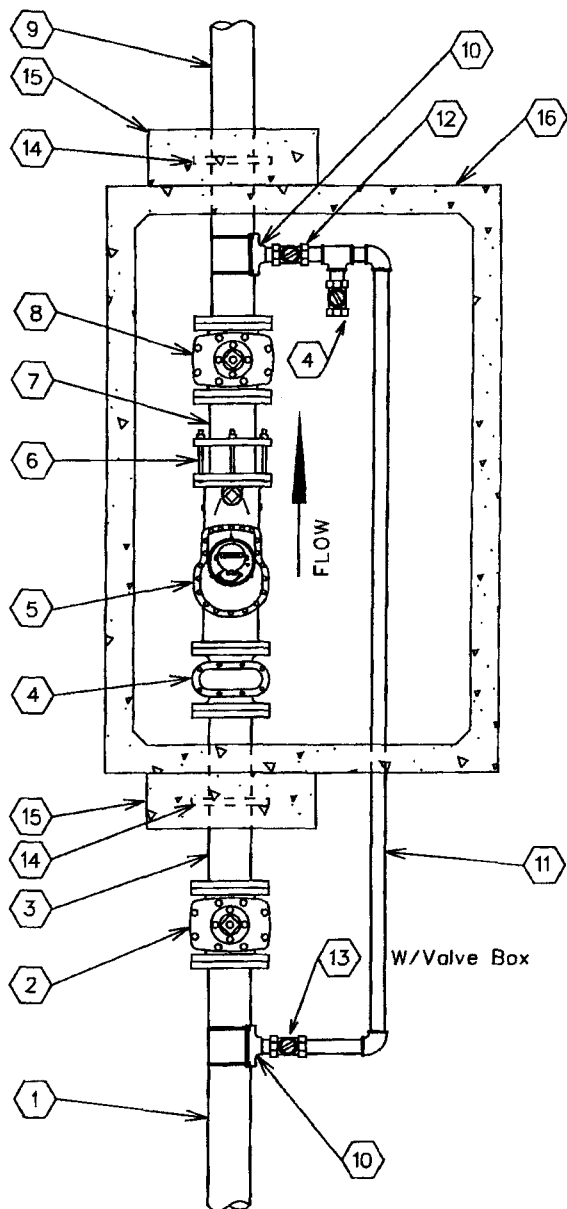
1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

4" COMPOUND METER

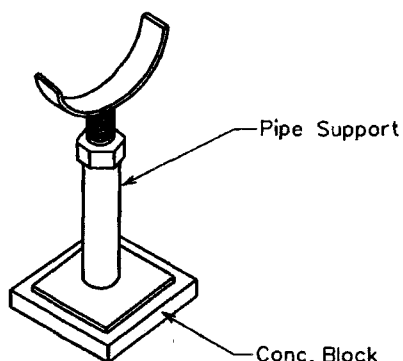
DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-2
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No.	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x 3'-0" D.I.P. Spool flng x pe
4.	2" Test Port
5.	6" Compound Meter
6.	6" F.C.A.
7.	6"x 1'-0" D.I.P. Spool flng x pe
8.	6" Gate Valve flng
9.	6"x 4'-0" D.I.P. Spool flng x pe
10.	6"x2" Tapping Saddle
11.	2" Copper Pipe
12.	2" Ball Valve / Locking (Normally Closed)
13.	2" Mueller B25122 Ball Valve w/B20299 Nut
14.	6" Megalug
15.	24"x24"x8" Conc. Thrust Block P.I.P.
16.	575-LA Conc. Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

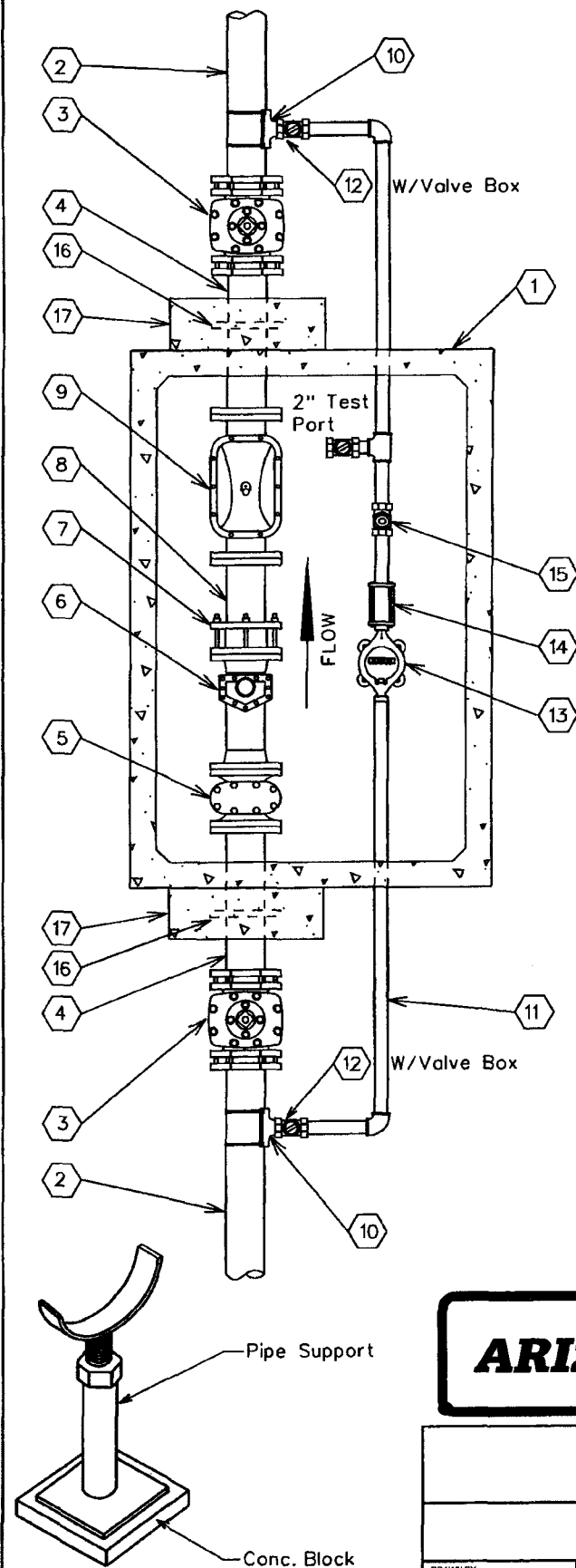


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

6" COMPOUND METER

DRAWN BY: CCO	APPROVED BY: MW	DATE: 10/5/1993	△08.29.2006	E-9-12-3
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No.	FITTINGS SCHEDULE
1.	575-LA Conc. Vault
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. Spool Piece flng x pe
5.	6" Strainer
6.	6" Turbo Meter
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. Spool Piece flng x pe (TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" Detector Check
10.	6"x*N" Tapping Saddle
11.	*N" Copper Pipe
12.	*N" Ball Valve (Locking)
13.	*N" Meter
14.	*N" Coup. Adapt.
15.	*N" Flapper Check Valve
16.	6" Megalug
17.	24"x24"x8" Conc. Thrust Block P.I.P.

*N - Size To Be determined By A.W.Co.

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See detail below).
2. Pipe support locations to be determined by field personnel.
3. All copper pipe that comes in contact with concrete to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).
6. To change from a 6" service to a 4" service, change all listed 6" materials to 4" materials.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

6" COMPOUND SERVICE

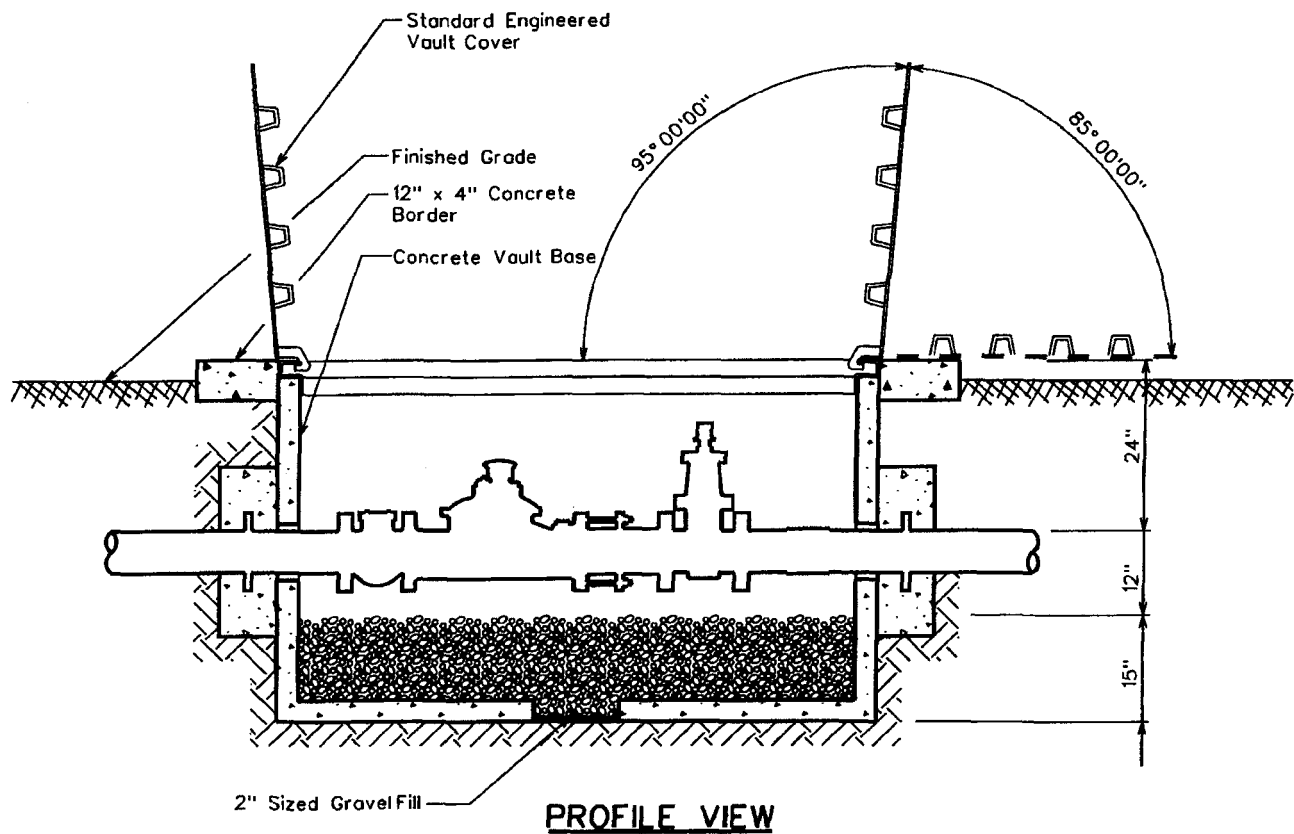
DRAWN BY: CCO

APPROVED BY: MW

DATE: 10/05/1993

△08.29.2006

E-9-12-4



CONCRETE VAULT & COVER SPECIFICATIONS

- Vault - Base No. 575-BL
 Cover - Standard Engineered Vault Cover
 . 4874 Aluminum Diamond Plate Cover
 For Non-Traffic Loading Areas
 Or
 . 4874 Galvanized Steel Diamond Plate
 Cover W/ H-20 Traffic Loading
 . Double Torsion Spring Assisted Doors W/
 Recessed Hasp & Safety Latches

NOTES

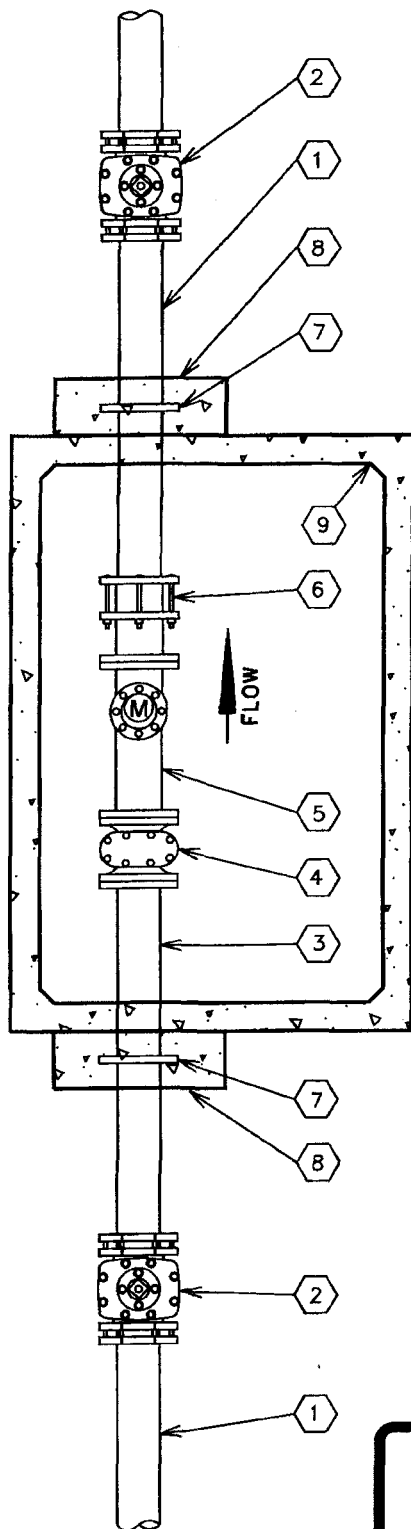
1. Total Depth Of Concrete Vault To Be A Maximum Of 3'-0" From Top Of Vault Cover To Top Of Gravel Fill.
2. Service Connections Larger Than 6" In Diameter Will Conform To The Same Vault & Cover Specifications. Size Of Vault & Cover To Be Determined By A.W.Co. Engineers.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
 FOR THE INSTALLATION OF

CONCRETE VAULT

DRAWN BY:	CCO	APPROVED BY:	MW	DATE:	10/5/1993	△ 05.17.2001	E-9-12-5
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No.	FITTINGS SCHEDULE
1.	Ductile Iron Pipe
2.	Gate Valve M.J.
3.	D.I.P. Spool Piece Flg x Pe (10xDia.)
4.	Meter Strainer
5.	Propeller Meter
6.	Flanged Coupling Adapter
7.	Megalug Gland (Thrust Anchor)
8.	Concrete Thrust Block P.I.P.
9.	Concrete Vault

NOTE:

1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
2. Pipe support locations to be determined by field personnel.
3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

NON-POTABLE PROPELLER METER

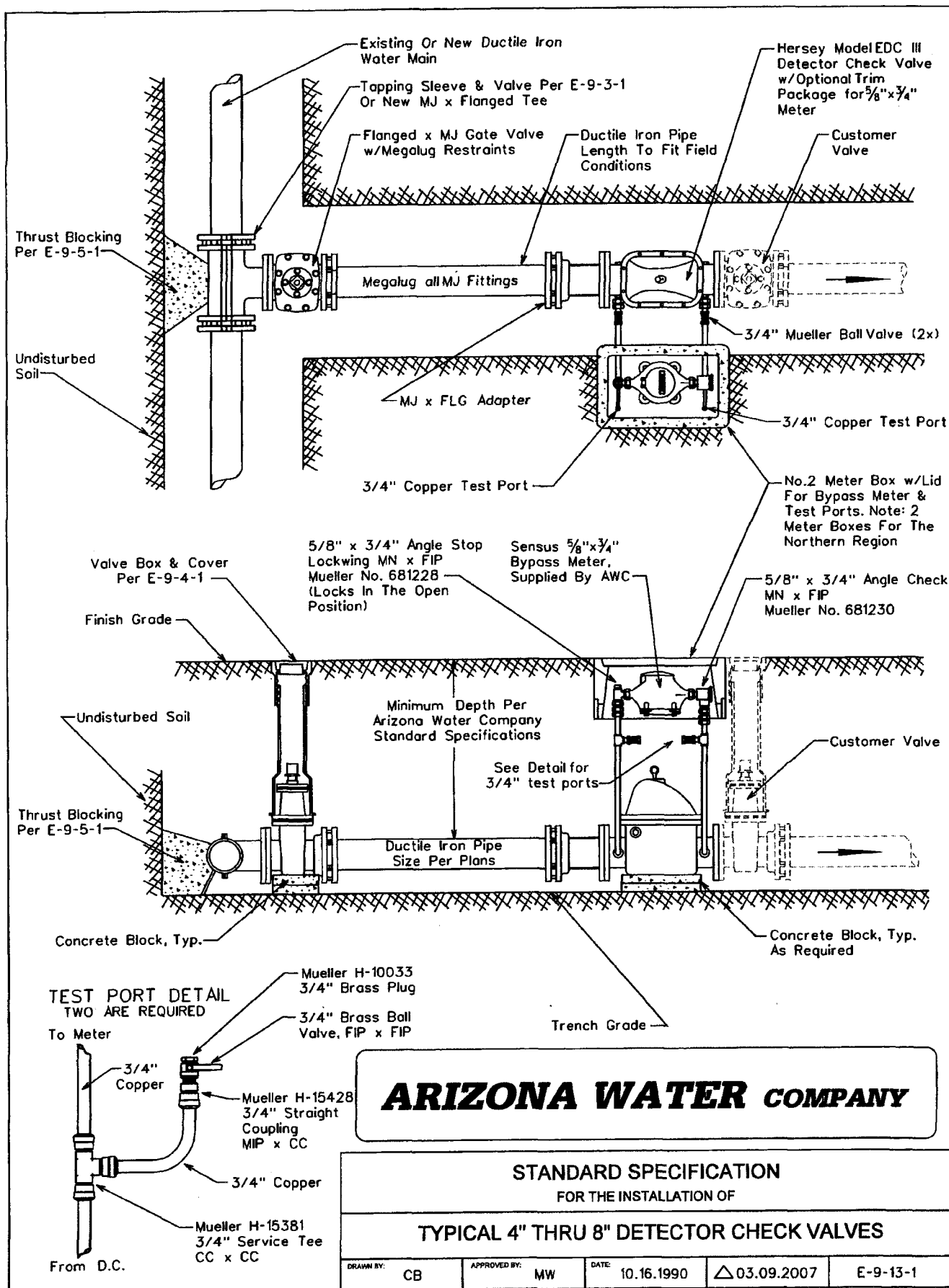
DRAWN BY: JPK

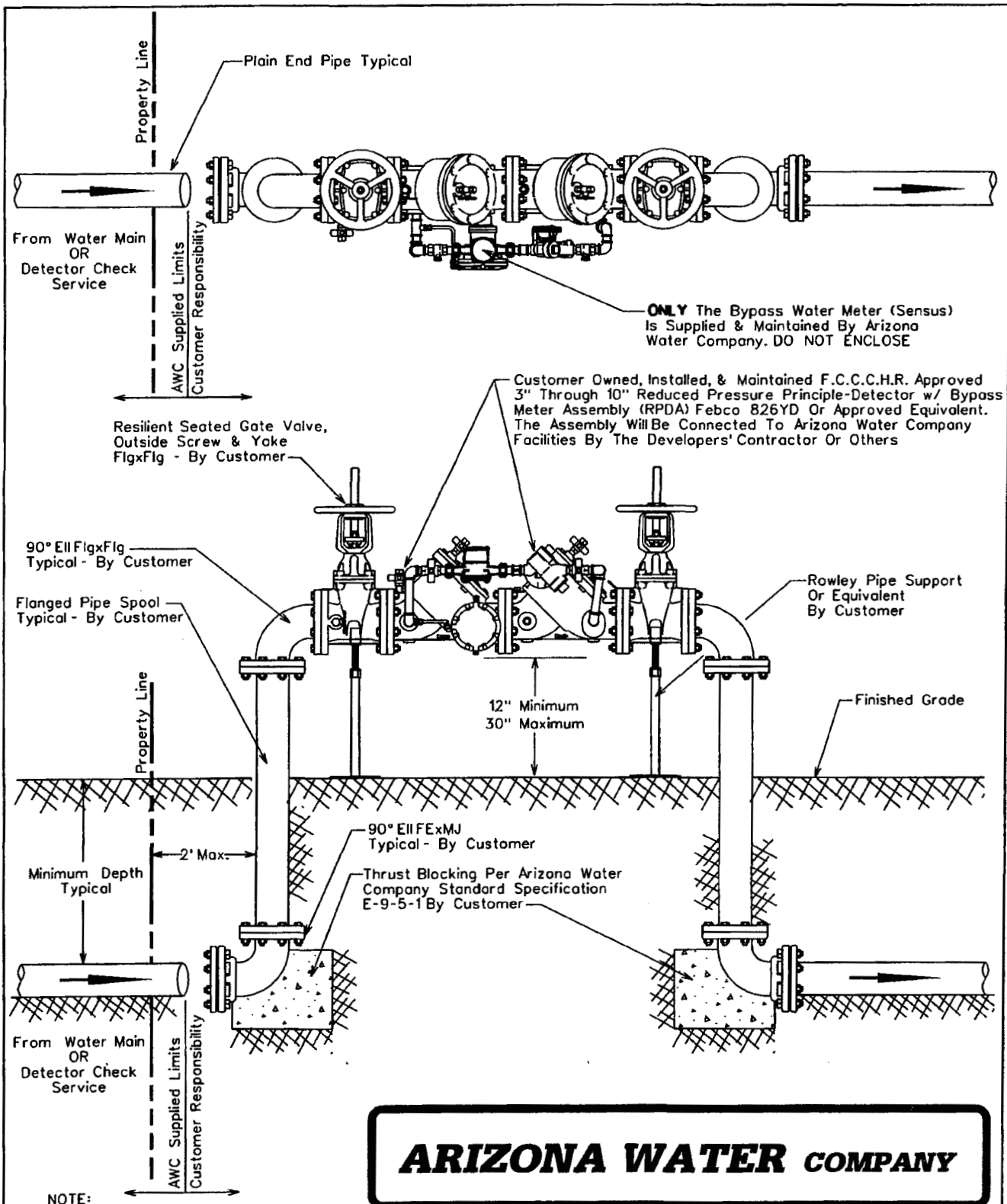
APPROVED BY: MW

DATE: 7-20-95

△

E-9-12-6





Minimum Depth Of Cover Over 6" & 8" Mains is 36 Inches, 12" & Greater is 48 Inches Unless Otherwise Specified

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

3" THRU 10" REDUCED PRESSURE PRINCIPLE-DETECTOR
WITH BYPASS METER ASSEMBLY (RPDA) FOR FIRELINE SERVICES

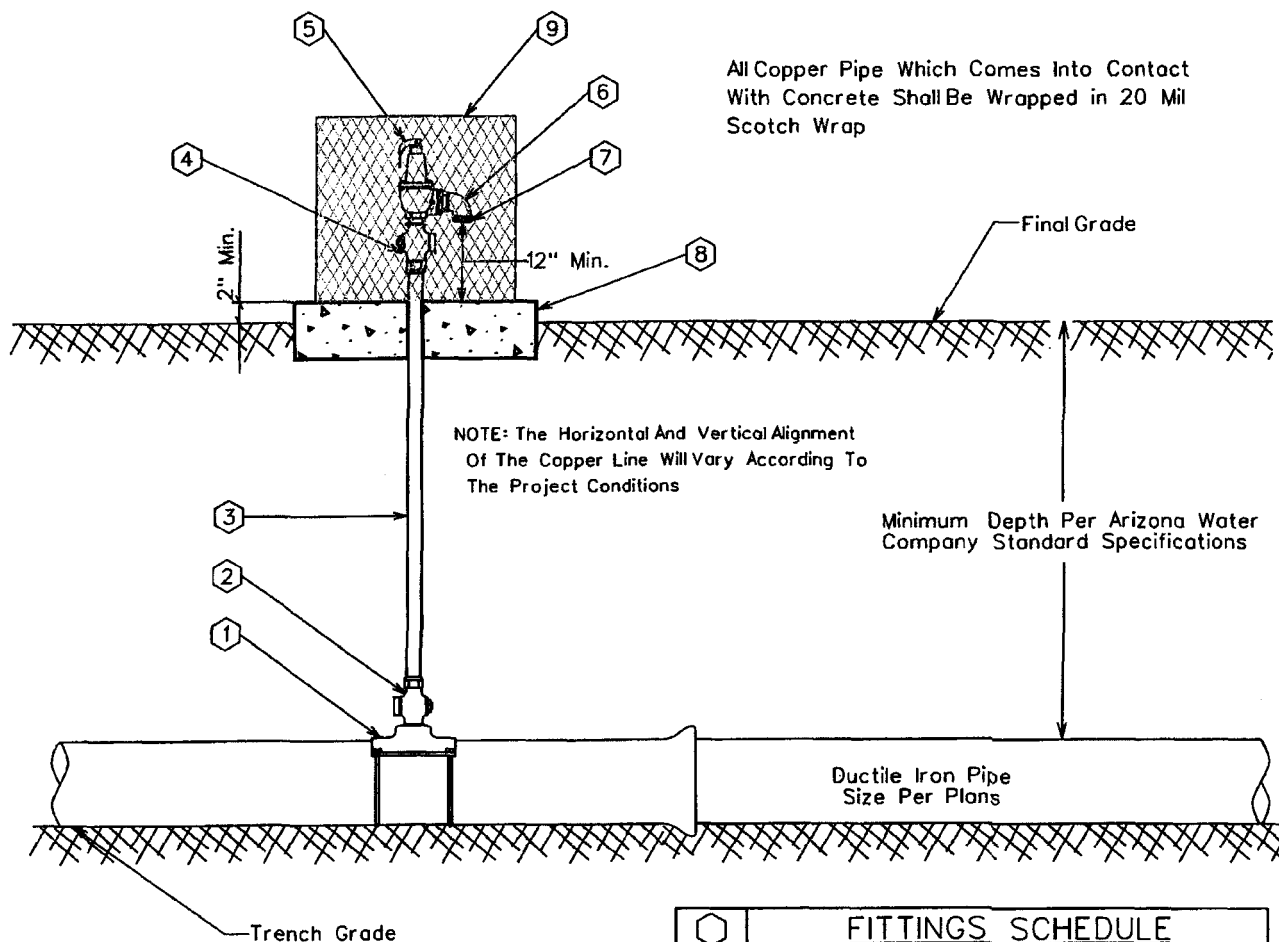
DRAWN BY: CB

APPROVED BY: MW

DATE: 10-13-98

△ 1-19-2000

E-9-13-2



NOTE:

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

F	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'K' Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Brass Street Elbow
7.	No.16 Wire Mesh Screen (Non-Corroding)
8.	4" Thick Concrete Pad - Class 'C' Concrete
9.	Vandal enclosure to be centered on the concrete pad

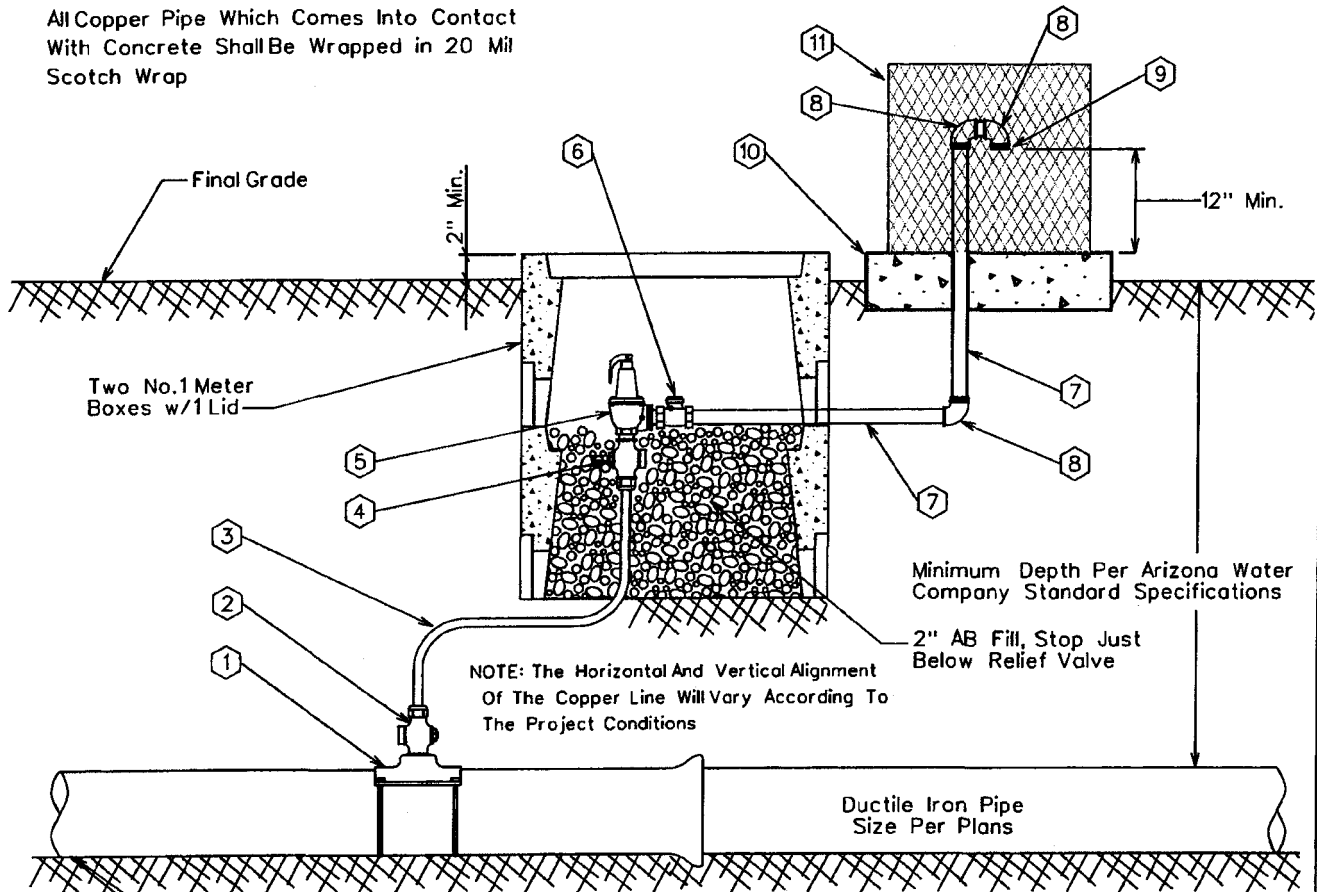
ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY

DRAWN BY: CCO APPROVED BY: MW DATE: 3/20/1986 08.29.2006 E-9-14-1

All Copper Pipe Which Comes Into Contact With Concrete Shall Be Wrapped in 20 Mil Scotch Wrap



NOTE:

1. Pressure relief valves are typically located just down stream of a pressure reducing station or where system conditions might be subject to greater than allowable pressures.
2. The relief valve assembly and vandal enclosure shall be located out of the roadway, but within the right-of-way or easement.

NOTE: The Horizontal And Vertical Alignment Of The Copper Line Will Vary According To The Project Conditions

Minimum Depth Per Arizona Water Company Standard Specifications

Ductile Iron Pipe
Size Per Plans

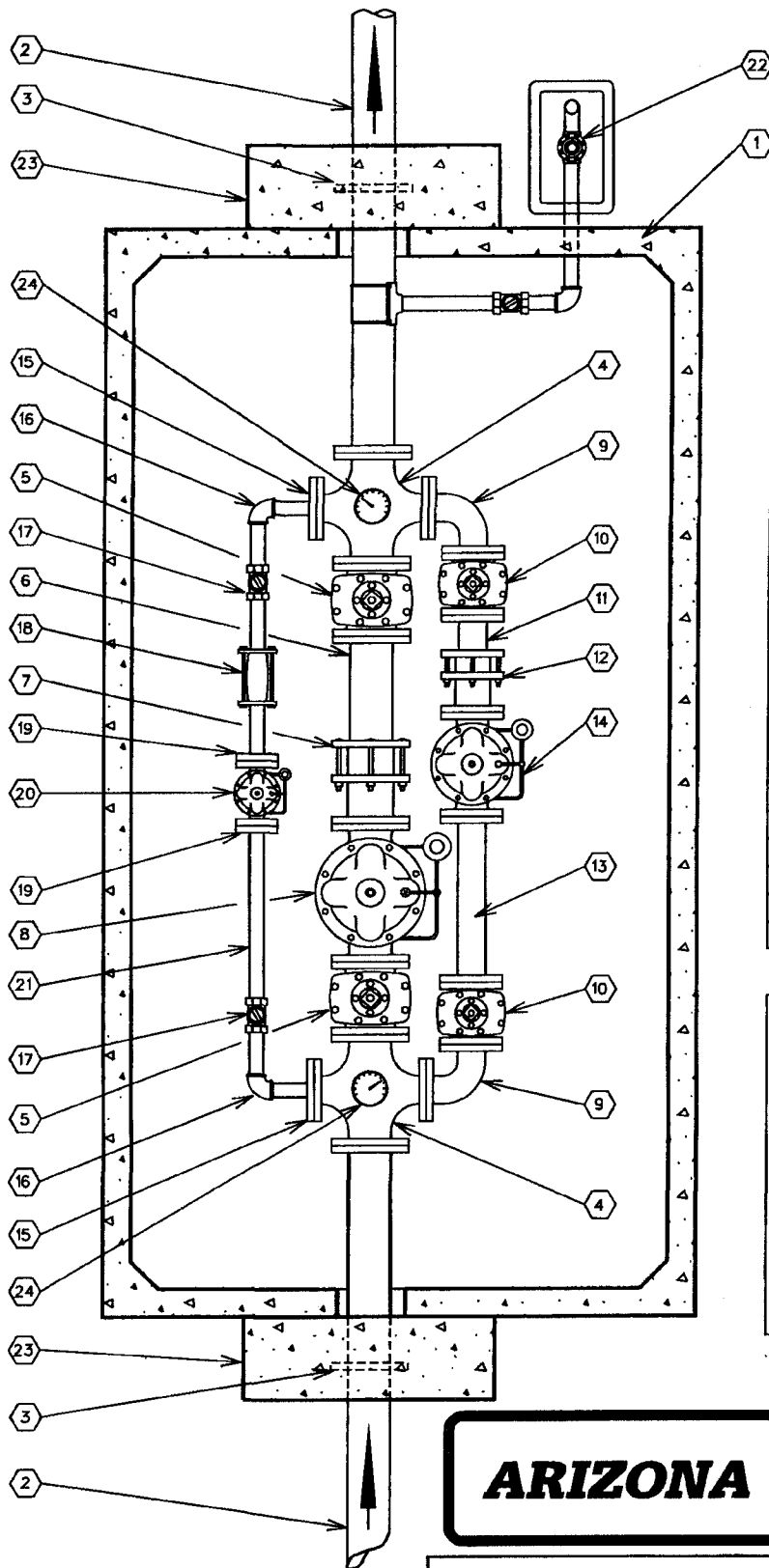
⬡	FITTINGS SCHEDULE
1.	Mueller BR2B Bronze Service Saddle - Double Strap
2.	2" Mueller B-25008 Taper x Comp. Ball Corp Stop
3.	2" Type 'M' Rigid Copper w/NO Splices - Field Fit
4.	2" Mueller B-25028 IP x Comp. Ball Corp Stop
5.	2" Pressure Relief Valve Watts 174A With A 2" Inlet / 2" Outlet 30-150 psi W/ Bronze Body
6.	2" Bronze Check Valve Watts Series CV
7.	2" Schedule 40 Cut Pipe - Field Fit
8.	2" Brass Street Elbow
9.	No.16 Wire Mesh Screen (Non-Corroding)
10.	4" Thick Concrete Pad - Class 'C' Concrete
11.	Guardshack, Model GS-1, Available From BPD, Inc. Available In Leaf Green Or Desert Tan

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PRESSURE RELIEF VALVE - NORTHERN REGION

DRAWN BY: CCO	APPROVED BY: MW	DATE: 3/20/1986	08.29.2006	E-9-14-2
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No.	FITTINGS SCHEDULE
1.	612 LA Conc. Vault (See Note 3)
2.	6"x6'-0" D.I.P. Spool Fig.xP.E.
3.	6" Megalug (Thrust Anchor)
4.	6"x4" Cross Fig.
5.	6" Gate Valve Fig.
6.	6"x2'-0" D.I.P. Spool Fig.xP.E.
7.	6" Fig. Coup. Adapt. (Rockwell 913)
8.	6" High Flow Pressure Reducing Valve Fig.
9.	4" 90° Ell. Fig.
10.	4" Gate Valve Fig.
11.	4"x1'-0" D.I.P. Spool Fig.xP.E.
12.	4" FLg. Coup. Adapt. (Rockwell 913)
13.	4"x2'-0" D.I.P. Spool Fig.
14.	4" Medium Flow Pressure Reducing Valve Fig.
15.	2"x9" O.D. Reducing Fig. (I.P.T.)
16.	2" 90° Ell. F.I.P.
17.	2" Ball Valve F.I.P.
18.	2" Comp. Coup. (Rockwell 411)
19.	2" Companion Fig. (I.P.T.)
20.	2" Low Flow Pressure Reducing Valve Fig.
21.	2" Sched. 40 Std. Pipe
22.	2" Pressure Relief Valve (See E-9-14-1)
23.	12"x36"x36" Conc. Thrust Block P.I.P.
24.	Pressure Gauge w/shut off valve

NOTE:

1. Use Rowley pipe supports or equivalent as needed. (See E-9-12-4)
2. Pipe support locations to be determined by field personnel.
3. Vault-612 LA top section w/12" Dia. sump hole. Cover-concrete slab top w/(4) 4'-0" x2'-6" aluminum spring loaded hinged style covers for non-traffic loading areas. For areas w/low density traffic, cover is to be designed for H-20 traffic loading.
4. All Sched. 40 Std. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PRESSURE REDUCING STATION

DRAWN BY:

JPK

APPROVED BY:

MW

DATE:

11-16-88

△ 9-27-95

E-9-15-1

1. Specific Items To Be Painted Deer-O Pure White Enamel:

- A. All Booster Pumps.
- B. All Electrical Motors And Gas Engines.
- C. Well Pump Discharge Heads.
- D. Electrical Panel.

2. Specific Items To Be Painted Frost Cap White Or Deer-O Pure White Enamel:

- A. Well Shelter.

3. Specific Items To Be Painted OSHA Orange:

- A. Electrical Conduit.

4. All Other Items To Be Painted With Either:

(At Manager's Discretion)

- A. Cholla Green
- B. Forest Green
- C. Sonora Beige
- D. Red Rock
- E. Rock Brown
- F. Deer-O Pure White
- G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

PAINT COLOR SELECTION

DRAWN BY:

CCO

APPROVED BY:

DATE

3/20/1986

△ 2/13/2001

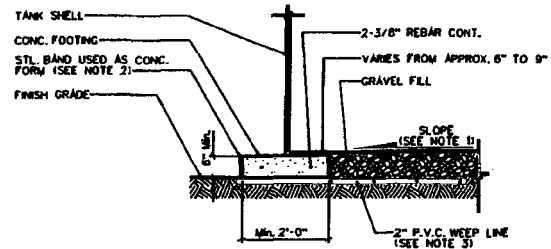
E-9-16-1

1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.
2. $\frac{1}{4}$ " minimum shell plate.
3. Minimum of 12" diameter roof vent, screened with No. 16 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the shell plate.
4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above weir box high water level.
5. Storage tank shall be placed upon adequately compacted base material.
6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.
7. Tank and related fittings shall be enclosed with a 6 foot chain link fence with lockable gates and anti-personnel wire on top of fence.
8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.
9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlap the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and bolted in place. Tanks larger than a 60 foot diameter require 2 shell manholes.
10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within $\frac{1}{2}$ " of shell with 10 gauge sheet steel.
11. Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.
12. The following information will be included with application for approval to construct:
 1. Tank location _____
 2. Tank height _____
 3. Tank diameter _____
 4. Tank capacity _____
 5. Method of water level control _____
13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.
14. The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61.

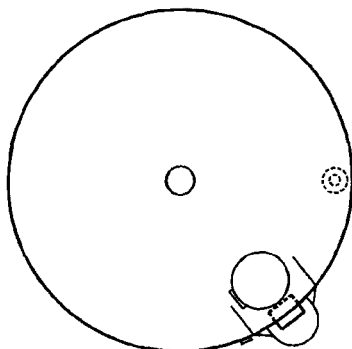
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

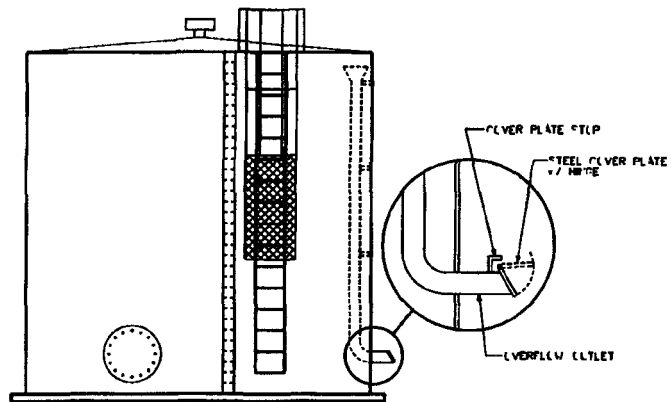
1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".
2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN $\frac{1}{8}$ ".
3. INSTALL 8-2" DIA. x 10'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45'), PERFORATE 8'-0" OF LINE WITH $\frac{1}{2}$ " DIA. HOLES @ 6" O.C. PLUG INTERIOR END OF LINE w/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



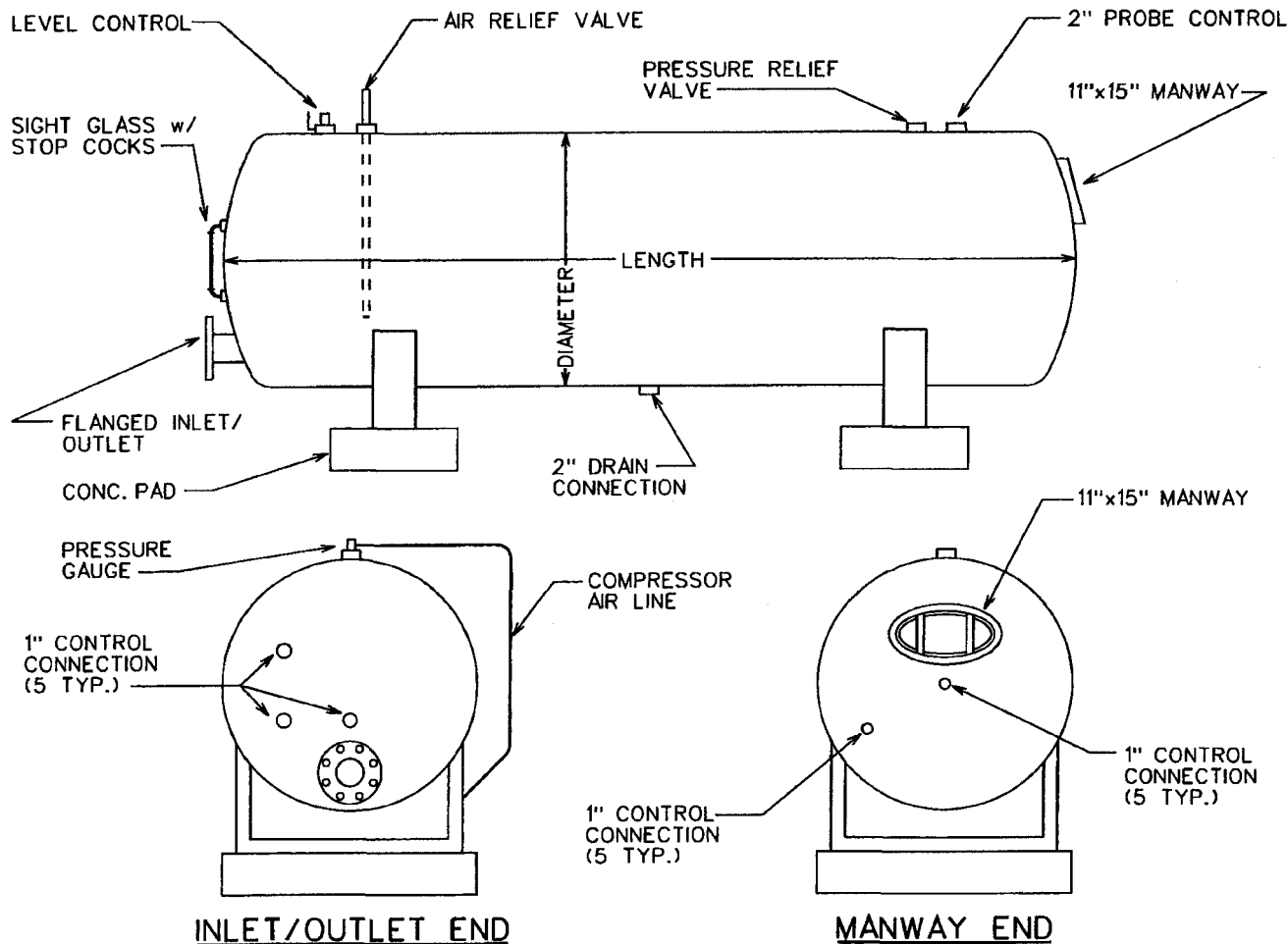
PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

STEEL WATER STORAGE TANK

DRAWN BY: JPK	APPROVED BY: MJW	DATE: 10-17-88	2-12-96	E-9-17-1
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1. ALL HYDROPNEUMATIC TANKS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE ASME CODE FOR UNFIRED PRESSURE VESSELS, SECTION VIII, DIVISION 1.
2. FINISHED TANK SHALL BE DISINFECTED IN ACCORDANCE WITH ADEQ BULLETIN No. 8 BEFORE BEING PLACED INTO SERVICE.
3. THE WELDED STEEL HYDROPNEUMATIC TANK WILL BE COATED AS PER AWWA SPECIFICATION D102 & NSF STANDARD 61.
4. THE FOLLOWING INFORMATION WILL BE INCLUDED WITH THE APPLICATION FOR APPROVAL TO CONSTRUCT.
 1. Tank Location _____
 2. Tank Length _____
 3. Tank Diameter _____
 4. Tank Capacity _____
 5. Maximum Working Pressure _____

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

HYDROPNEUMATIC TANK

DRAWN BY:

JPK

APPROVED BY:

MW

DATE:

3-20-1986

△ 01.16.2007

E-9-18-1

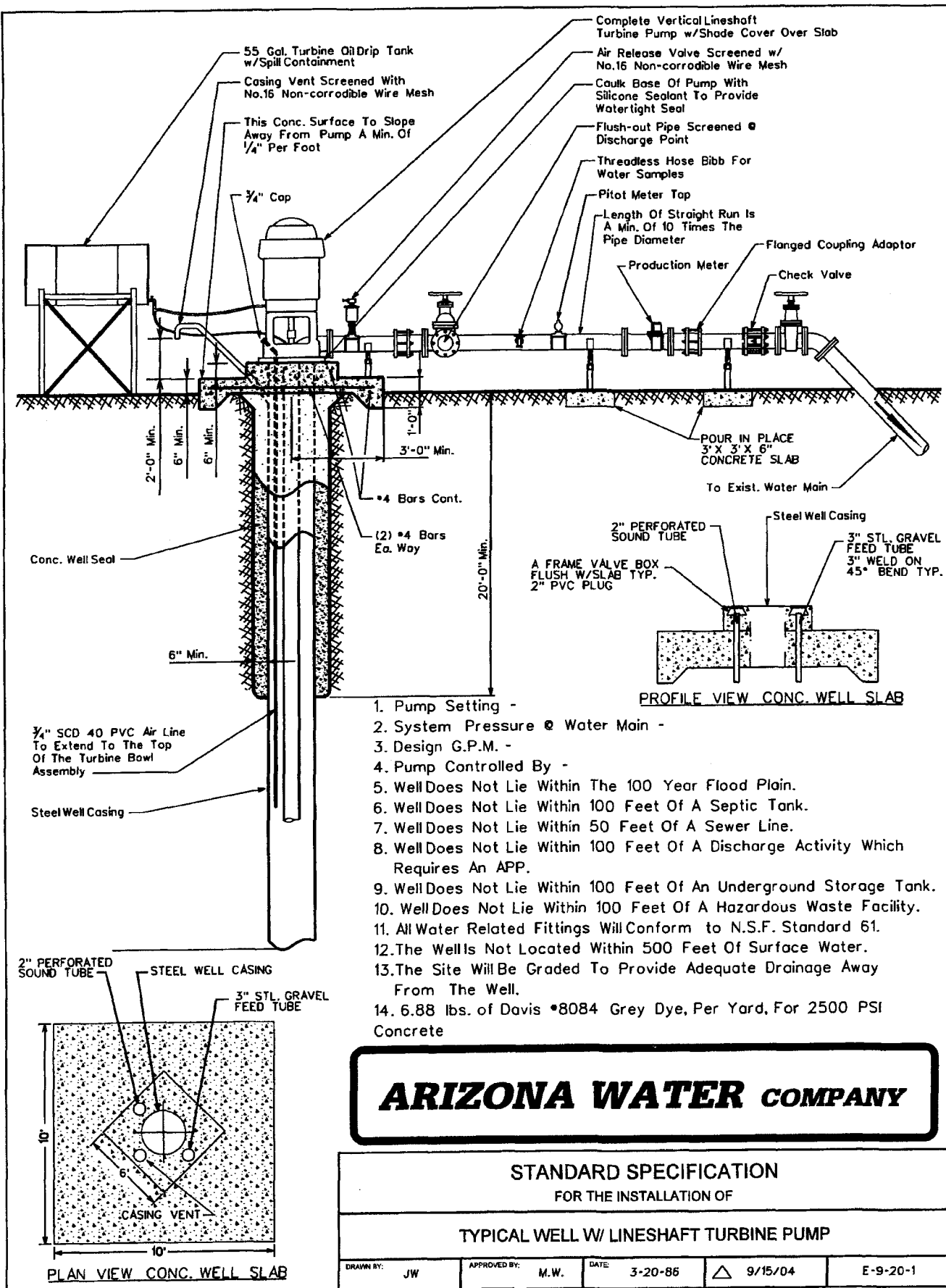
NOT
CONVERTED
TO
CAD

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WELL SHELTER

DRAWN BY:	CB	APPROVED BY:	DATE:	03.20.1986	△ 04.03.2001	E-9-19-1
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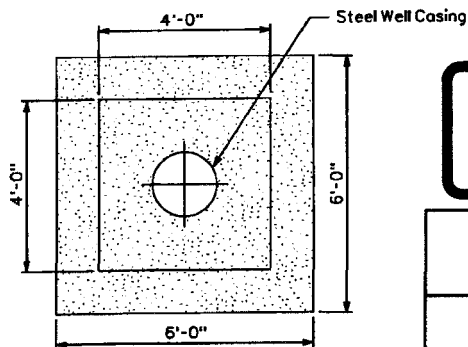
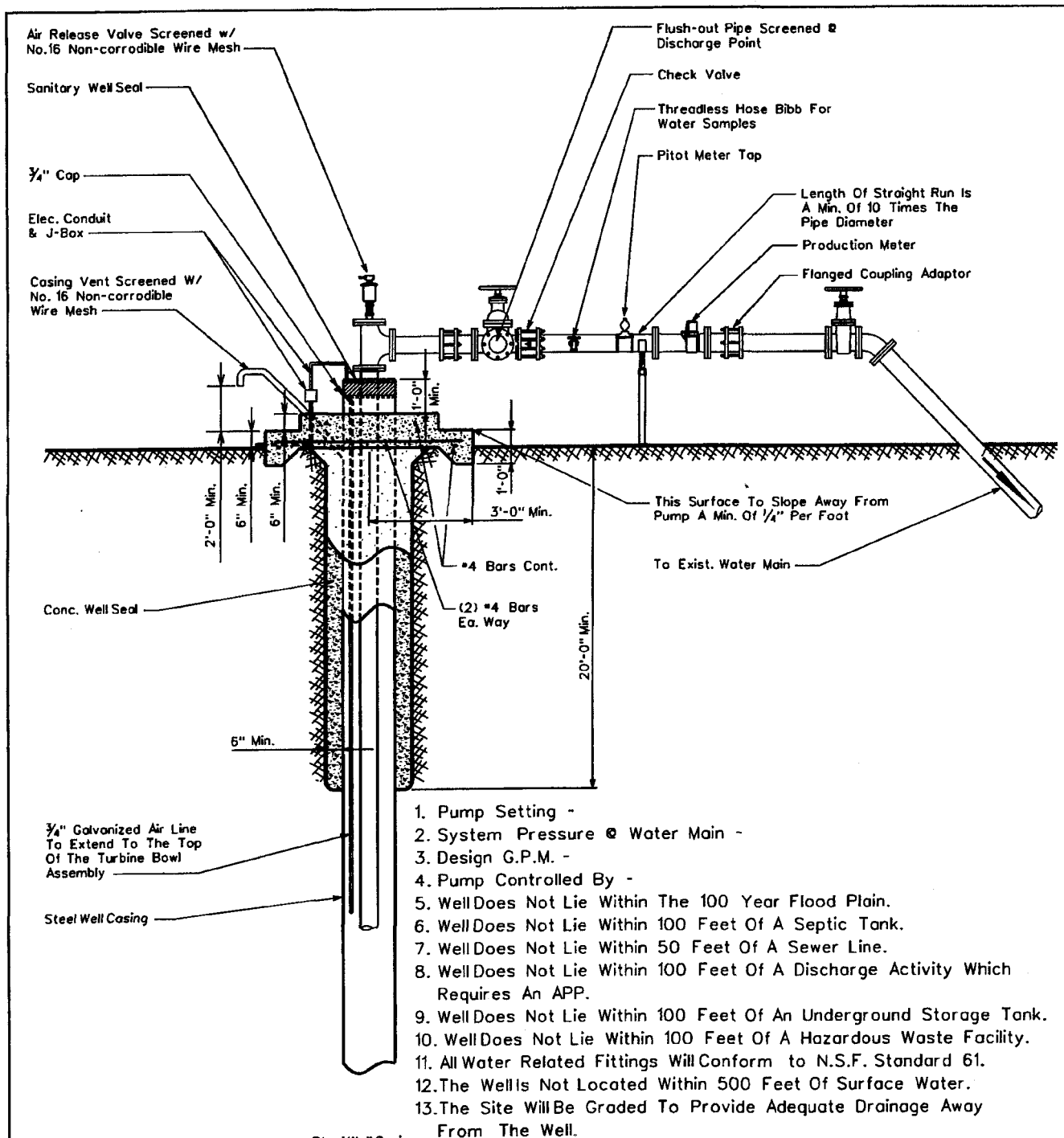


ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL WELL W/ LINESHAFT TURBINE PUMP

DRAWN BY: JW	APPROVED BY: M.W.	DATE: 3-20-86	9/15/04	E-9-20-1
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PLAN VIEW CONC. WELL SLAB

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

TYPICAL WELL W/ SUBMERSIBLE TURBINE PUMP

DRAWN BY: jpk	APPROVED BY: M.W.	DATE: 3-20-86	△ 2-16-01	E-9-21-1
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All New Purchases To Conform To The Following:

Column Pipe

4" I.D. - 8	Threads Per Inch	Tapered	$\frac{3}{4}$ "	Per Foot	Right Hand	
6" I.D. - 8	"	"	"	"	"	"
8" I.D. - 8	"	"	"	"	"	"
10" I.D. - 8	"	"	"	"	"	"
12" I.D. - 8	"	"	"	"	"	"
14" I.D. - 8	"	"	"	"	"	"

Oil Tube - Peerless Type

$1\frac{1}{2}$ " O.D. - 14	Threads Per Inch	Right Hand			
2" O.D. - 12	"	"	"	"	"
$2\frac{1}{2}$ " O.D. - 10	"	"	"	"	"
3" O.D. - 10	"	"	"	"	"
$3\frac{1}{2}$ " O.D. - 10	"	"	"	"	"
4" O.D. - 10	"	"	"	"	"

Line Shaft

$\frac{3}{4}$ " O.D. - 10	Threads Per Inch	Left Hand			
1" O.D. - 14	"	"	"	"	"
1- $\frac{3}{16}$ " O.D. - 10	"	"	"	"	"
1- $\frac{1}{2}$ " O.D. - 10	"	"	"	"	"
1- $\frac{11}{16}$ " O.D. - 10	"	"	"	"	"
1- $\frac{15}{16}$ " O.D. - 10	"	"	"	"	"
2- $\frac{3}{16}$ " O.D. - 10	"	"	"	"	"
2- $\frac{7}{16}$ " O.D. - 8	"	"	"	"	"

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

COLUMN PIPE, OIL TUBE AND LINE SHAFT

DRAWN BY:

CCO

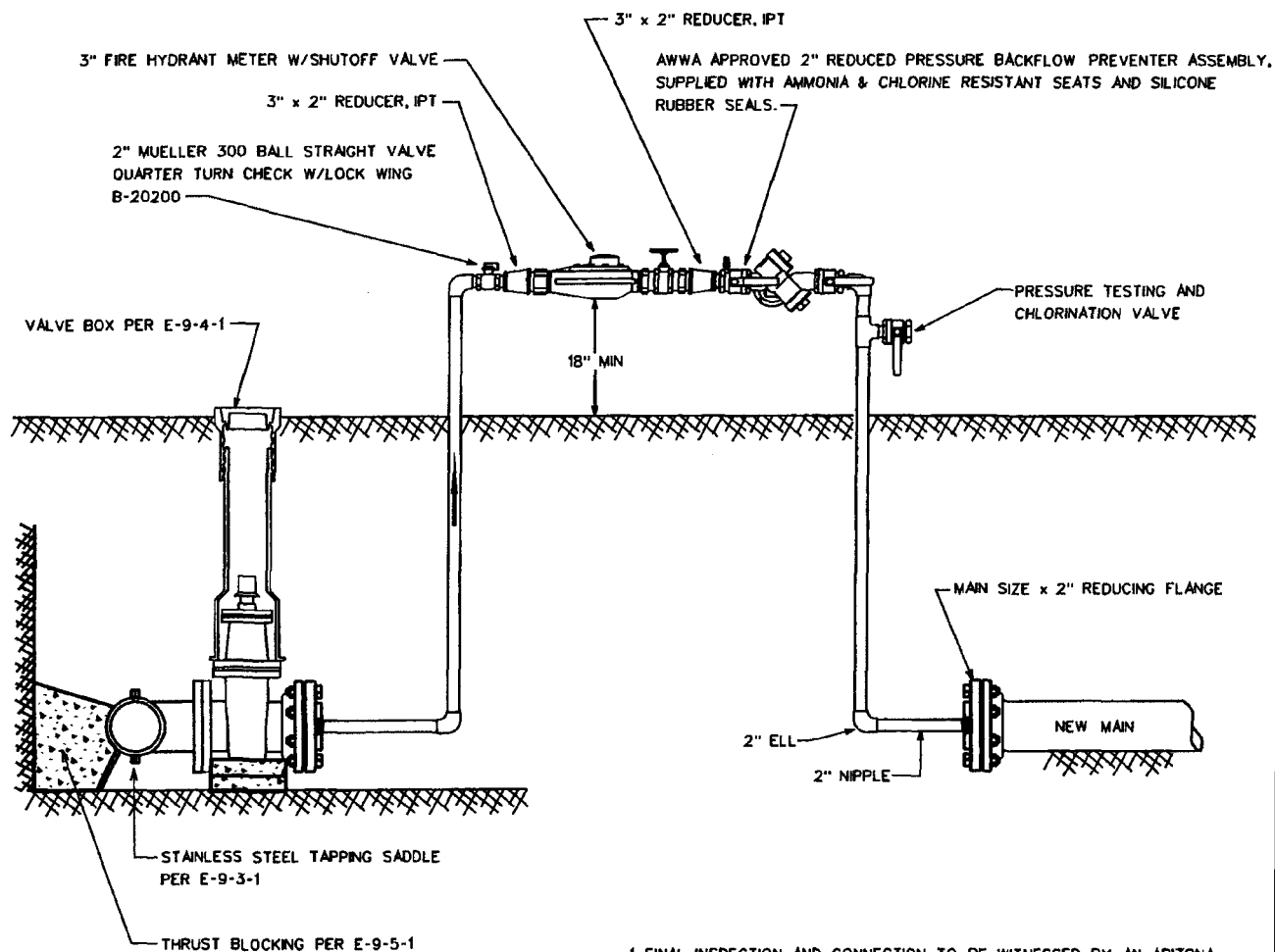
APPROVED BY:

DATE:

3/20/1996

\triangle 2/13/2001

E-9-22-1



1. FINAL INSPECTION AND CONNECTION TO BE WITNESSED BY AN ARIZONA WATER COMPANY REPRESENTATIVE.
2. REDUCING FLANGES TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP FOR TEMPORARY METER DOWNSTREAM OF THE REDUCING FLANGE FOR PRESSURE AND BACTEE TESTING.
4. JUMPER ASSEMBLY MUST BE A MINIMUM OF 18" ABOVE FINISHED GRADE.
5. BACKFLOW ASSEMBLY REQUIRES CERTIFICATION.
6. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL ALL TESTING, BACTERIAL CLEARANCE AND FINAL INSPECTIONS HAVE BEEN OBTAINED.
7. ALL NEW PIPING SHALL BE PROPERLY RESTRAINED.

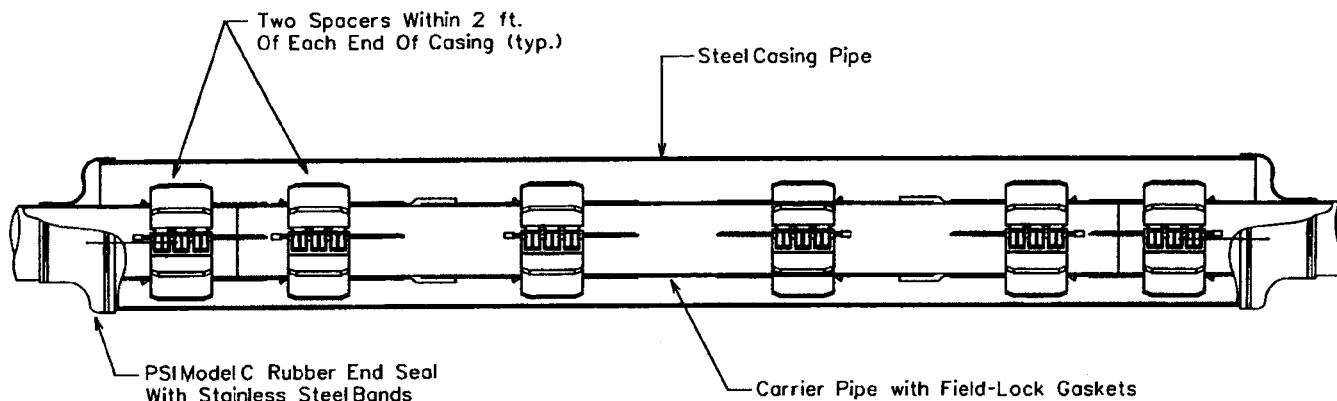
ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

HOT TAP & JUMPER METER CONNECTION

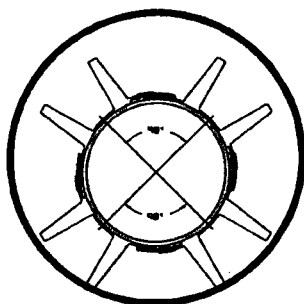
DRAWN BY: CB	APPROVED BY: MJW	DATE: 05.14.2004	△
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E-9-23-1



C R O S S S E C T I O N

The casing spacers shall be the PSIRanger II Casing Spacers as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.



S E C T I O N C U T

End Seals

After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the PSI Model "C" end seals as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

NOTE: The Carrier Pipe Shall Be Polywrapped Prior To The Skid Installation & Insertion Into The Carrier Casing For Divisions Requiring Polywrapped Pipe.

*Thickness Of Skid To Extend A Minimum of 1/2" Above The O.D. Of The Pipe Bell or Gland.

OD Push On Joint Bell	OD M.J. BELL
6" - 8.66"	6" - 11.12"
8" - 10.82"	8" - 13.37"
12" - 15.05"	12" - 17.94"
16" - 19.74"	16" - 22.56"
20" - 23.98"	20" - 27.08"
24" - 28.16"	24" - 31.58"
30" - 35.40"	30" - 39.12"
36" - 41.84"	36" - 46.00"
48" - 55.94"	48" - 60.00"

PIPE SIZE	CASING SIZE	CASING SIZE ID	CASING SCHEDULE	WALL THICKNESS	SKID SIZE
6"	16"	15.25"	STD.	.375	*x4x12
8"	18"	18.25"	STD.	.375	*x4x12
12"	22"	21.25"	STD.	.375	*x4x12
16"	28"	27.25"	STD.	.375	*x4x12
20"	32"	31.25"	STD.	.375	*x4x12
24"	36"	35.25"	STD.	.375	*x4x12
30"	48"	47.25"	STD.	.375	*x4x12
36"	54"	53.25"	STD.	.375	*x4x12
48"	66"	65.25"	STD.	.375	*x4x12

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

TYPICAL WATER LINE ENCASEMENT

DRAWN BY: CB	APPROVED BY:	DATE: 3/20/1996	△ 09.27.2006
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E-9-24-1

CALCIUM HYPOCHLORITE TABLET CHLORINATOR FEEDER SPECIFICATIONS

SCOPE - This specification describes a ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator System as manufactured by ARCH Chemicals, 501 Merritt Seven, P.O. Box 5204, Norwalk, CT, 06856-5204.

DESCRIPTION - The chlorination system shall be completely assembled, ready to install. The chlorination system shall be a ARCH Chemicals Calcium Hypochlorite Tablet Feeder, or its equivalent, and shall be supplied with all its components factory mounted.

COMPONENTS - The chlorination system shall have the following components:

- A. 1/2" ARCH Chemical solid calcium hypochlorite tablet feeder
- B. Polyethylene system enclosure
- C. Integrated, level controlled solution tank
- D. Adjustable flow control valve
- E. Chemical metering pump
- F. Chemical mixing pump
- G. On/off pump control switch
- H. Waterproof electrical junction box
- I. Corrosion resistant schedule 40 piping
- J. Inlet and outlet valves
- K. Total solution output control valve

ELECTRICAL FEATURES - The following electrical features shall be provided:
A. Safety switch, 2 pole, fused for 30 Amps, for 120 Volts, 60 cycle, single phase power.

CHLORINATOR DESIGN - The chlorination facility shall be designed and constructed in accordance with Arizona State Department of Health Engineering Bulletin Number 8 - "Disinfection of Water Systems", Latest Revision.

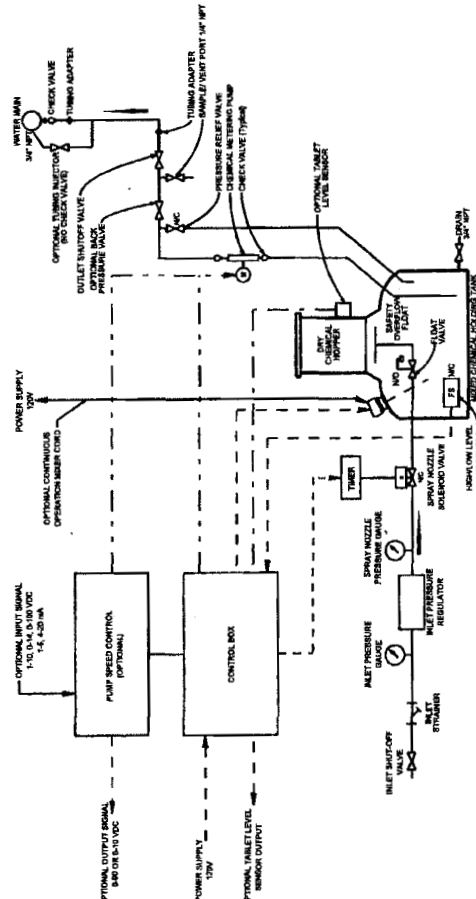
CHLORINATION EQUIPMENT - The chlorination equipment shall be a ARCH Chemicals Calcium Hypochlorite tablet chlorinator, approved by NSF Standard 51.

CHLORINATOR OPERATION - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin Number 8, "Disinfection of Water Systems", Table 1, latest revision.

CHLORINATOR SYSTEM DESCRIPTION - ARCH Chemicals tablet chlorinator systems incorporate a patented chlorinator which is designed to utilize ARCH Chemicals 1-1/2" solid calcium hypochlorite tablets (NSF Standard 51, NSF International, Inc., 1001 E. 17th Avenue, Denver, CO 80202, EPA Registration # 1258-1179). The chlorinator is mounted on a polyethylene system enclosure. The inlet water is sprayed on the calcium hypochlorite tablet and collected in a solution tank. This chlorinated solution is then pumped out of the tank through a chemical metering pump. This metering pump is then adjusted to obtain the desired CL residual.

Chlorinator Fluid Schematic

NTS

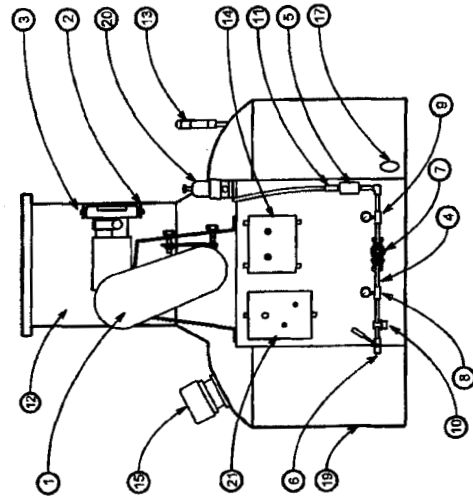


ARCH Chemicals Calcium Hypochlorite Tablet Chlorinator

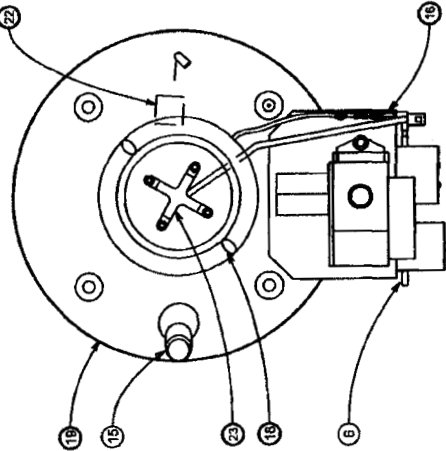
NTS

HYPOCHLORINATOR COMPONENTS:

1. Chemical Metering Pump
2. Pump Suction Connection
3. Inlet Water Pressure Gauge
4. Inlet Water Assembly
5. Inlet Water Solenoid Valve
6. Inlet Strainer
7. Inlet Tubing Connection
8. Inlet Shut-Off Valve
9. Inlet Pressure Regulator
10. Inlet Water Pressure Gauge
11. Inlet Tubing Connection
12. Dry Chemical Hopper
13. Section Line
14. Electrical Control Box With Power On/Off
15. Electric Motor
16. Solution Discharge Connection
17. Tank Drain Valve
18. Observation Port
19. Mixed Chemical Holding Tank
20. Pressure Relief Valve
21. Pump Speed Control
22. High Level Shut-Off Float Switch
23. Water Spray Nozzles



FRONT VIEW



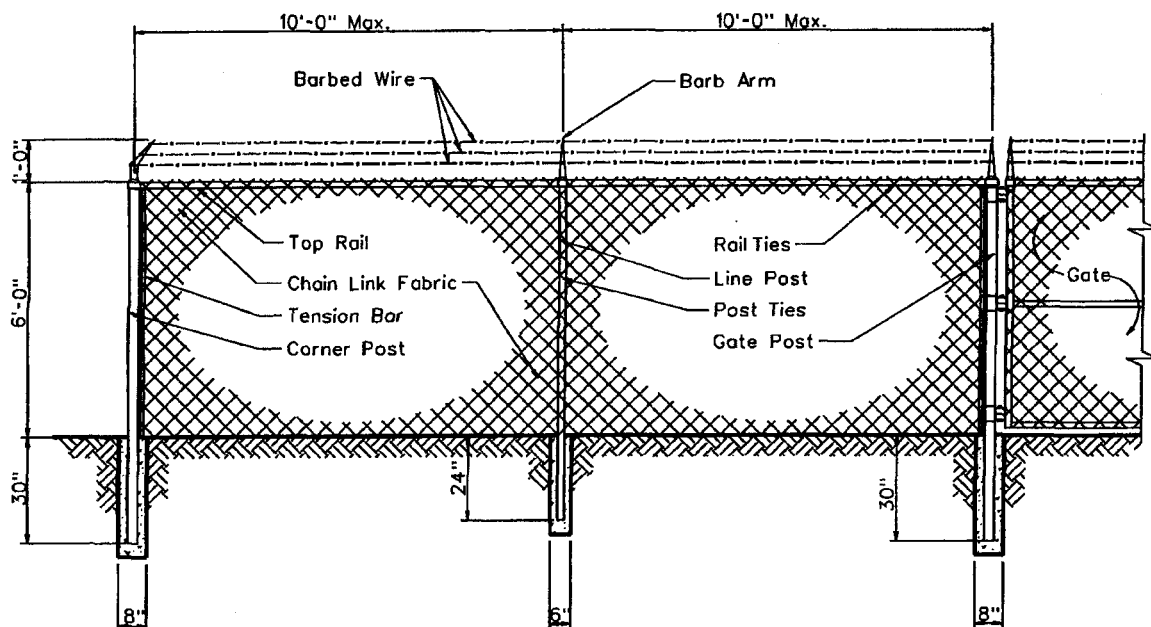
TOP VIEW
HOPPER REMOVED FOR CLARITY

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

CALCIUM HYPOCHLORITE TABLET CHLORINATOR

APPROVED BY: CB DATE: 02-09-2000 E-9-25-1



Line Post:	1-7/8" O.D.	1.74 lbs. P/L.F.	ASTM A-256
End Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Corner Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Gate Post:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Top Rail:	1-5/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
Chain Link Fabric:	9 Ga. 2" Mesh Galv. Before Weave		
Selvage:	Barb/Knuckle		
Fittings:	Pressed Steel		
Barb Wire:	2-1/2 Ga./2 Point		
Barb Arm:	1 Piece/45° Arm		
Tension Wire:	9 Ga./Galv.		
Line Post Set:	6"x24" In Concrete		
Terminal Post Set:	8"x30" In Concrete		

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

CHAIN LINK FENCE

DRAWN BY:

CCO

APPROVED BY:

MW

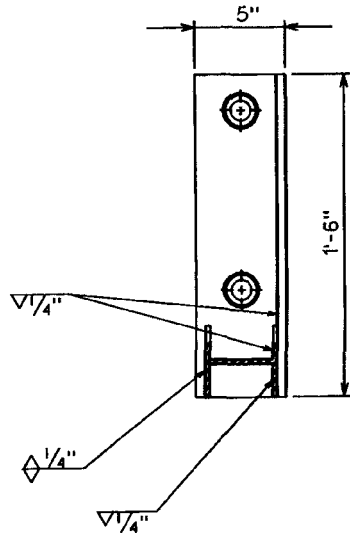
DATE:

7/7/1992

DATE:

2/9/2001

E-9-26-1



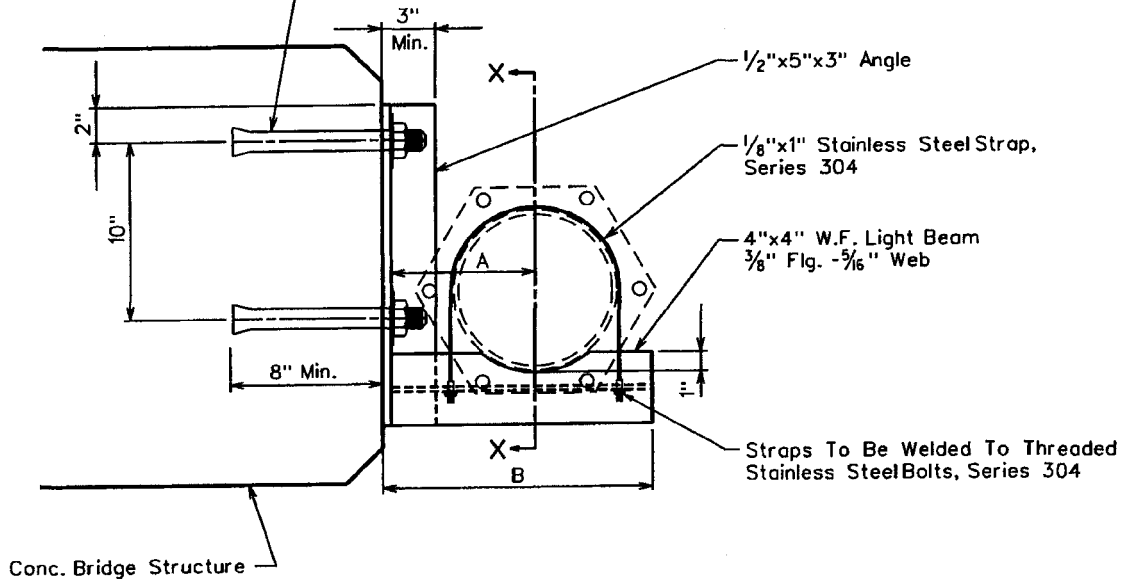
SECTION X-X

NOTES

1. Minimum 2 Supports Per Joint Of Pipe.
2. All Bolts Shall Have A Lock Washer Under The Nut.
3. All Nuts Shall Be Stainless Steel Series 304.

PIPE SIZE	A	B
8"	8"	15"
10"	9"	17"
12"	10"	19"

1/8"x12" Stainless Steel Wedge Bolts, Series 304



SUSPENSION DETAIL

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

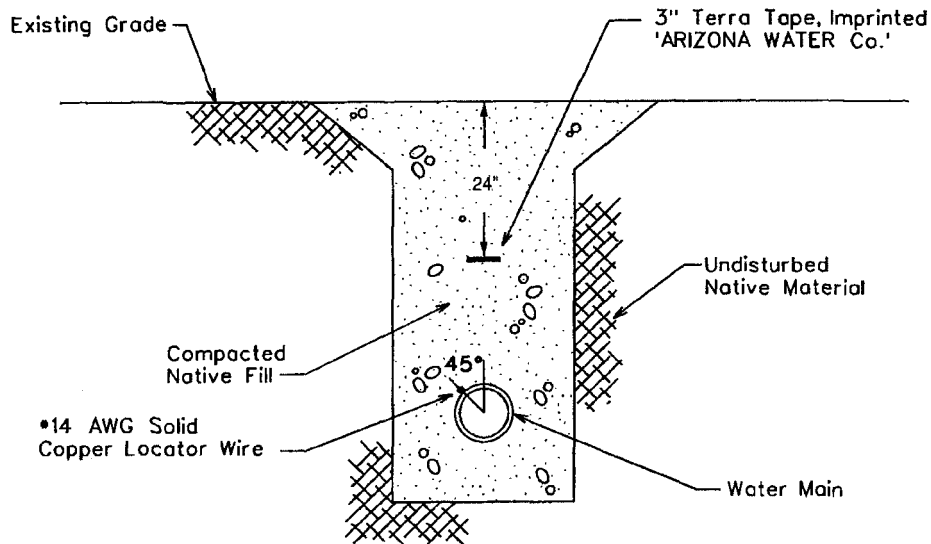
DRAWN BY: JPK

APPROVED BY: MJW

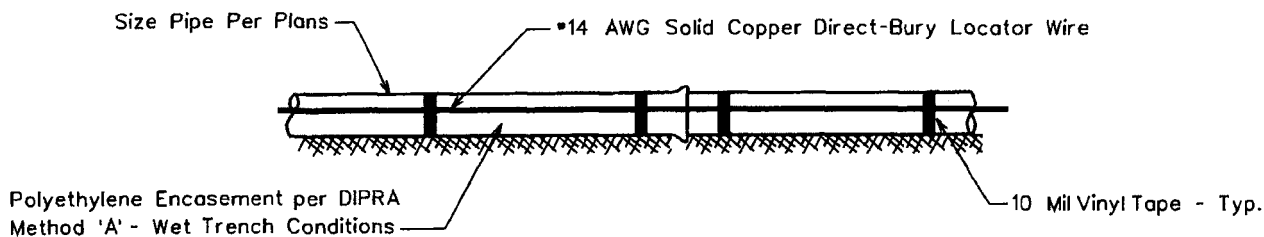
DATE: 7-12-96



E-9-27-1



TYPICAL WATER TRENCH DETAIL



TYPICAL PROFILE VIEW

WIRE GENERAL NOTES:

1. All pipe shall have #14 AWG Solid Copper Direct-Bury Locator Wire Installed Directly To The Polywrap At 45° From The Vertical Center Of The Pipe and Shall Be Attached Using 10 Mil Vinyl Tape.
2. The Locating Wire Shall Terminate At the Top Of Each Valve Box and Be Capable of Extending 12" Above the Top Of The Box In Such A Manner So As Not To Interfere With Valve Operation.

TAPE GENERAL NOTES:

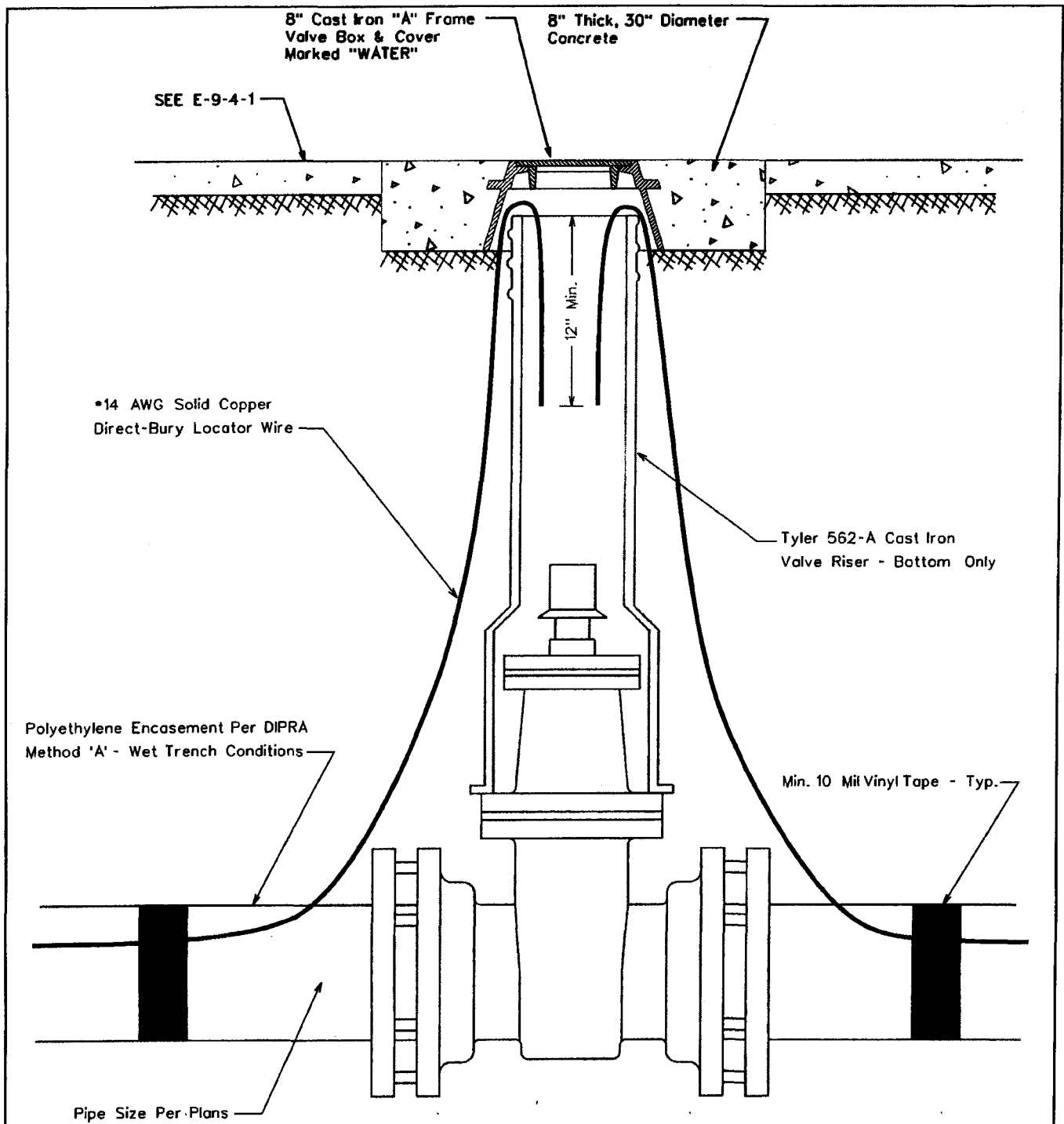
1. Use Terra Tape 3" Marking Tape As Manufactured By Reef Industries Inc. Of Houston, Texas (1-800-231-2417)
2. The Tape Is Blue & Imprinted 'ARIZONA WATER Co.'
3. INSTALLATION: The Pipe Warning Tape Shall Be Installed Over All Water Mains And Shall Be Buried 24 Inches Below The Surface Over The Center Of The Pipe.
 - A) The Backfill Shall Be Sufficiently Leveled So That The Tape Is Installed On A Flat Surface.
 - B) The Tape Shall Be Centered In The Trench With The Printed Side Up.
 - C) Care Shall Be Exercised To Avoid Movement Of The Tape While The Remaining Backfill Is Moved Into The Trench.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR THE INSTALLATION OF

PIPE WARNING TAPE AND LOCATOR WIRE

DRAWN BY: CB	APPROVED BY:	DATE: 03.24.1997	△ 09.27.2006	E-9-28-1
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ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

LOCATOR WIRE TERMINATION

DRAWN BY:

CB

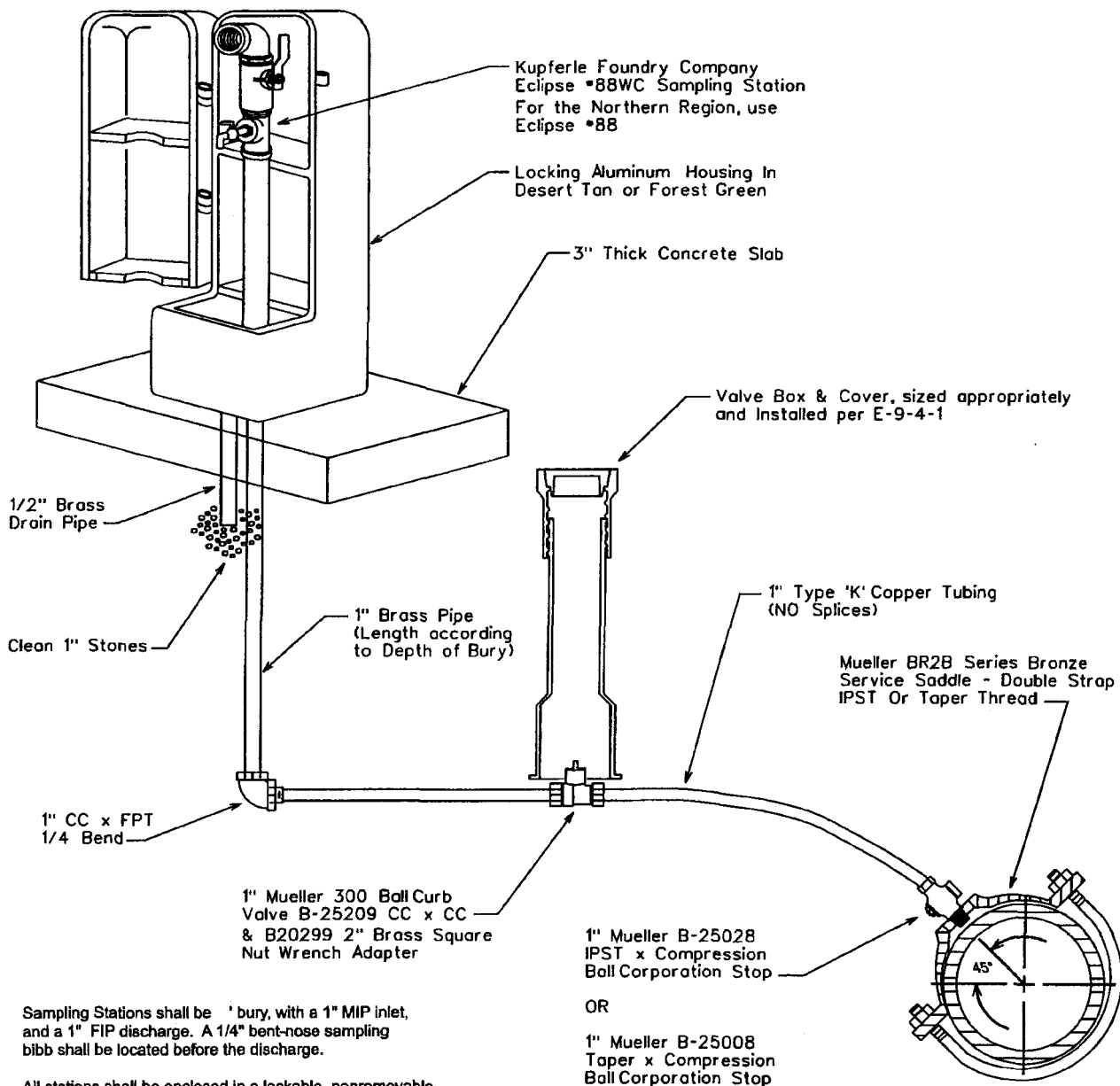
APPROVED BY:

DATE:

09.27.2006



E-9-28-2



Sampling Stations shall be 1' bury, with a 1" MIP inlet, and a 1" FIP discharge. A 1/4" bent-nose sampling bibb shall be located before the discharge.

All stations shall be enclosed in a lockable, nonremovable, aluminum-cast housing.

When opened, the station shall require no key for operation, and the water will flow in an all brass waterway.

All working parts will be of brass and serviceable from above ground with no digging. (OPTIONAL: if desired, a 1/2" brass drain tube will be provided within the locking cover).

A 1" ball valve will control the water flow, and be located before (or after) the sampling bibb, as manufactured by Kupferle Foundry, St. Louis, MO 63102.

SADDLE TAP TO CA, PVC, OR DI PIPE

NOTE: The minimum distance between taps on mains other than ductile iron is 12"

Pipe Depth Per
E-8-1-2, Item 3.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

SAMPLING STATION

DRAWN BY: CB

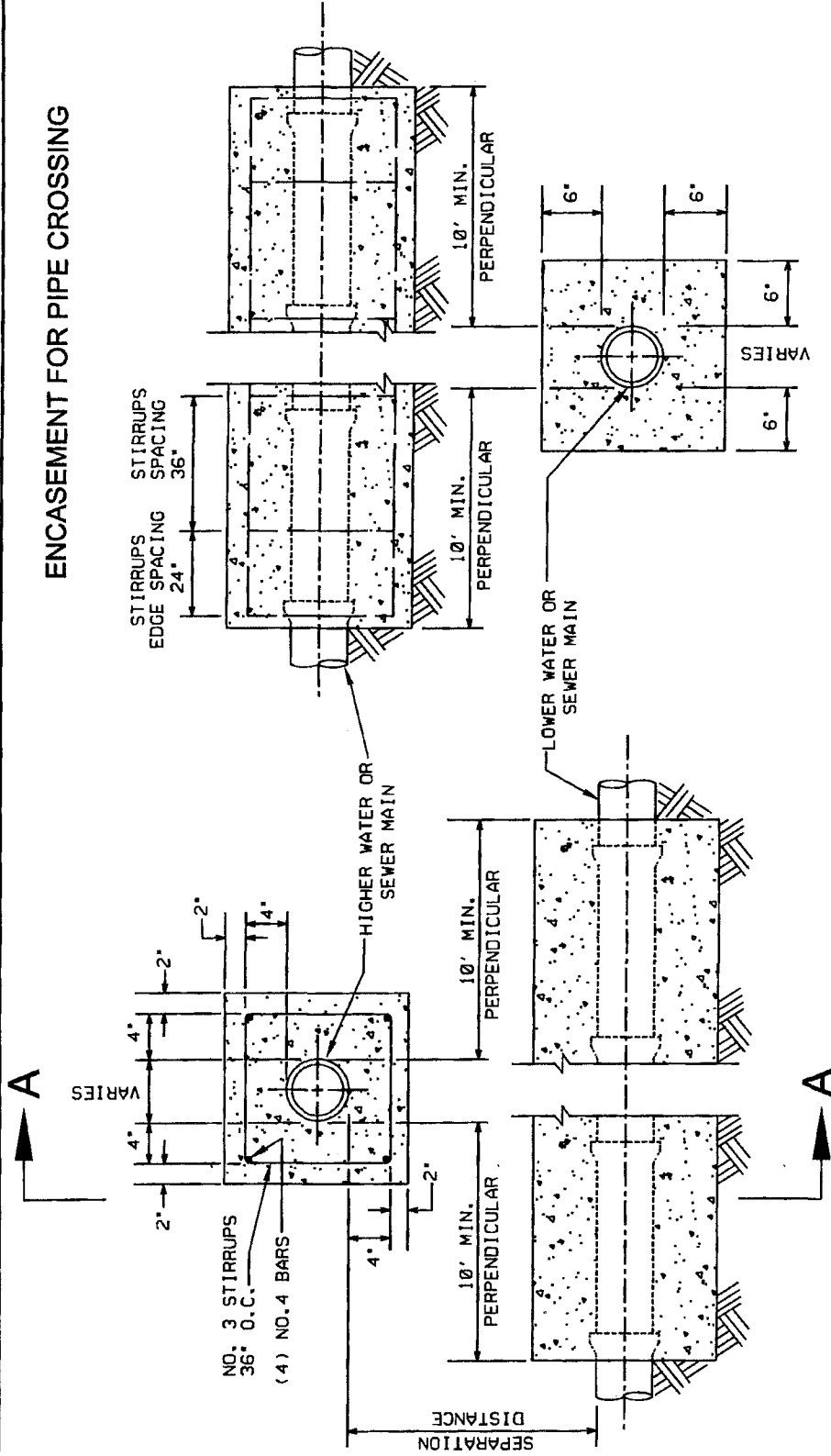
APPROVED BY: MW

DATE: 01.24.2007



E-9-29-1

ENCASEMENT FOR PIPE CROSSING



SECTION A-A

NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.

ARIZONA WATER COMPANY

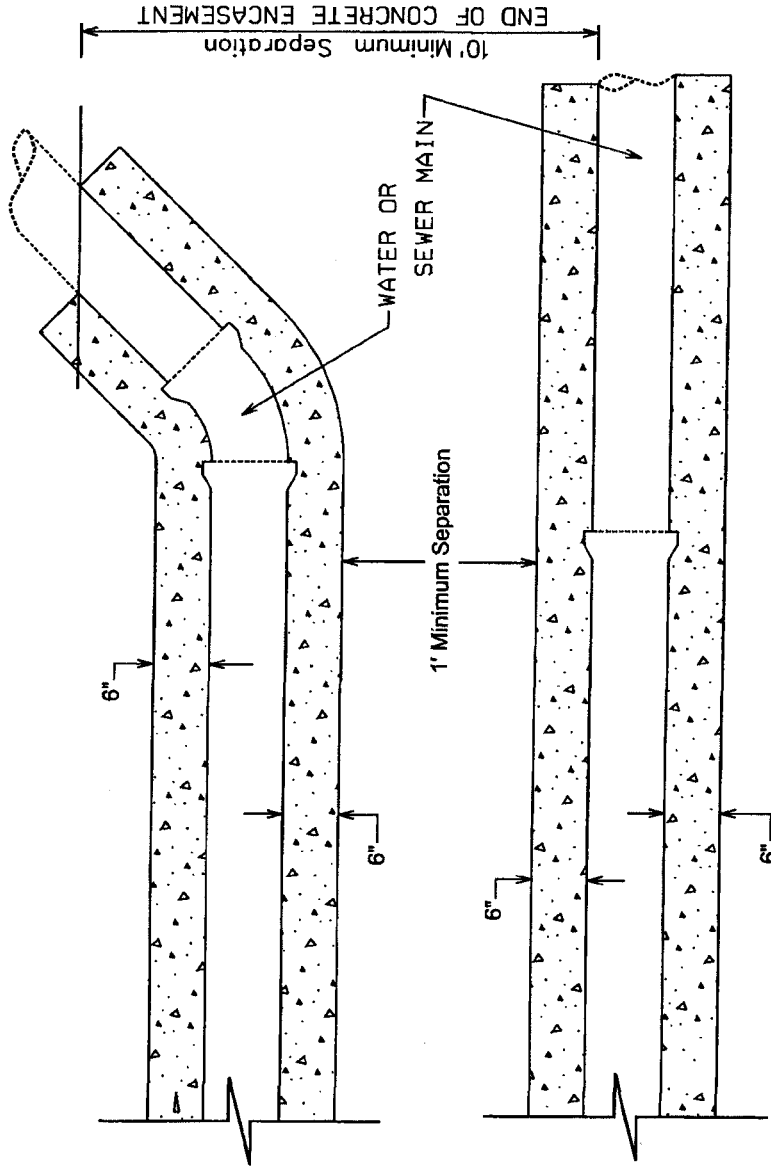
STANDARD SPECIFICATION
FOR THE INSTALLATION OF

WATER AND SANITARY SEWER
SEPARATION/PROTECTION

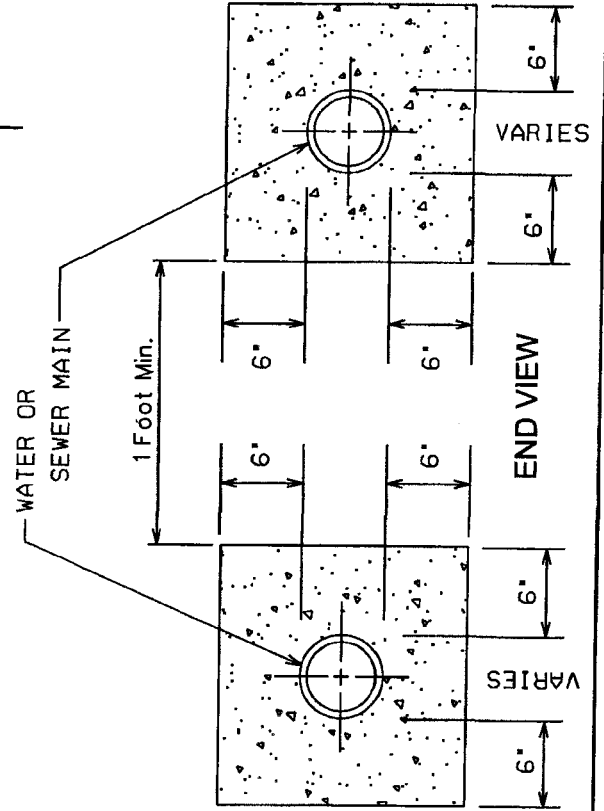
DRAWN BY: CB	APPROVED BY: JW	DATE: 04.07.2008	E-9-30-1
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NOTES:

1. 2,000 PSI CONCRETE
2. SEPARATION DISTANCES AND/OR OTHER EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS. SEE AWC STANDARD SPECIFICATION PAGES E-8-1-9 AND E-8-1-10.
3. SEE CROSS SECTION DETAIL FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
4. RECLAIMED WATER SHALL BE CONSIDERED A SANITARY SEWER WHEN PLACED NEXT TO A POTABLE WATER MAIN.



PLAN VIEW



ENCASUREMENT FOR PARALLEL PIPES

ARIZONA WATER COMPANY

**STANDARD SPECIFICATION
FOR THE INSTALLATION OF**

**WATER AND SANITARY SEWER
SEPARATION/PROTECTION**

DRAWN BY: CB	APPROVED BY: JW	DATE: 04.07.2008	△	E-9-30-2
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ENGINEERING SERVICES

Configuration, RTU Application Software (Globe Miami): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Globe Miami): \$8,850

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Lakeside): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Lakeside): \$4,065

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Heber): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Heber): \$4,665

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Superior): \$4,800

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Superior): \$2,900

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Sedona): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Sedona): \$6,275

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Bisbee): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

Integration, On-site at Customer Location (Bisbee): \$4,665

- Test communications between RTUs
- Test and Debug as needed
- Obtain signoff and acceptance

Configuration, RTU Application Software (Casa Grande): \$9,600

The System Engineer will configure the RTU application according to the system requirements.

0001	V118	ADD: 4 AO MODULE	\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-16DI/FET	16 DI/DO FET I/O Interface Kit (16DI)	\$ 255.00	\$ 255.00
0001	GD3572-16DO	16 DO I/O Interface Kit	\$ 650.00	\$ 650.00
0001	GD3572-4AO	4 AO I/O Interface Kit	\$ 255.00	\$ 255.00

Sedona: \$ 22,890.00

Note: Rancho Rojo Well, Sedona Golf Course Resort Tank, Sedona Golf Course Resort Well were previously quoted under a different project

QTY	Part No	Description	Unit Price	Extended
0010	GD5188	Lo Power Replacement Radio Kits (Southwest Center Well #8, Rainbow Well #6, Williams Well #7, Harmony High Park Tank, Valley Vista #13, Rimrock Well #2, Montezuma Haven Well #3, Montezuma Hills Tank, Rim Well #1, Harmony Well)	\$ 450.00	\$ 4,500.00
0010	FRN5907	DPSK BOARD (Southwest Center Well #8, Rainbow Well #6, Williams Well #7, Harmony High Park Tank, Valley Vista #13, Rimrock Well #2, Montezuma Haven Well #3, Montezuma Hills Tank, Rim Well #1, Harmony Well)	\$ 180.00	\$ 1,800.00
0001	GD2421	Electrical Install	\$ 5,655.00	\$ 5,655.00

0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Office)	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V224	ADD: HOUSING TAMPER SWITCH	\$ 40.00	\$ 40.00
0001	V480	ADD: 16 DO / DI FET	\$ 250.00	\$ 250.00
0001	V118	ADD: 4 AO MODULE	\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-16DI/FET	16 DI/DO FET I/O Interface Kit (16DI)	\$ 255.00	\$ 255.00
0001	GD3572-4AO	4 AO I/O Interface Kit	\$ 255.00	\$ 255.00

0002	F7563	ACE3600 WITH CDM750 136-174 MHZ (Wickiup Mesa Tank, Pinewood Tank)	\$ 1,850.00	\$ 3,700.00
0002	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 140.00
0002	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 600.00
0002	V245	ADD: 16DI 4DO EE 4AI +/-20MA	\$ 430.00	\$ 860.00

0002	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 620.00
0002	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 280.00
0002	GD3572-Mixed	Mixed I/O Interface Kit	\$ 385.00	\$ 770.00

Bisbee: \$ 15,341.00

QTY	Part No	Description	Unit Price	Extended
0009	GD4378	Hi Power Replacement Radio Kits (Tintown, Greaves Well, Stuart Pump Station, Fuller, Village Meadows, Sulger, Tombstone Canyon Tank, Spring Canyon Tank, Bisbee Office)	\$ 733.00	\$ 6,597.00
0003	GD6266	Radio Reprogramming (Tintown Booster, Naco, Tintown Tank)	\$ 95.00	\$ 285.00
0012	FRN5708	DPSK BOARD (Tintown, Greeves Well, Stuart Pump Station, Fuller, Village Meadows, Sulger, Tombstone Canyon Tank, Tintown Booster, Naco Tintown Tank, Spring Canyon Tank, Bisbee Office FIU)	\$ 207.00	\$ 2,484.00
0001	GD2421	Electrical Install	\$ 2,625.00	\$ 2,625.00

0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Naco MDLC (Formerly Intrac))	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V508	ADD: 8 DO EE RELAY 2A	\$ 260.00	\$ 260.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 310.00	\$ 310.00
0001	V114	ADD: 6.5 AH BACKUP BATTERY	\$ 140.00	\$ 140.00
0001	GD3572-8DO	8 DO I/O Interface Kit	\$ 420.00	\$ 420.00

Casa Grande: \$ 24,705.00

QTY	Part No	Description	Unit Price	Extended
0005	GD5188	Lo Power Replacement Radio Kits (Casa Grande Tank, North Park Tank, Pinal Booster Pump Site, Well 27, Well 29)	\$ 450.00	\$ 2,250.00
0003	GD6266	Radio Reprogramming (Stanfield Tank, Table Top, Tierra Grande Tank (spare))	\$ 95.00	\$ 285.00
0007	FRN5907	DPSK BOARD (Casa Grande Tank, North Park Tank, Pinal Booster Pump Site, Stanfield Tank, Table Top, Well 27, Well 29)	\$ 180.00	\$ 1,260.00
0001	GD2421	Electrical Install	\$ 6,650.00	\$ 6,650.00

0001	F7563	ACE3600 WITH CDM750 136-174 MHZ (Scott Drive Booster Station)	\$ 1,850.00	\$ 1,850.00
0001	V103	ADD: 3 I/O SLOTS FRAME	\$ 70.00	\$ 70.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING	\$ 300.00	\$ 300.00
0001	V245	ADD: 16DI 4DO EE 4AI +/-20MA	\$ 430.00	\$ 430.00

TERMS

1. **Validity of quotation:** This quotation is valid for 30 days, and is based on the information provided to us at the time of quotation. We are not responsible for incorrect or missing information. New information provided to us after the quotation is generated may result in a revised quotation containing additional products or services required.
2. **Delivery date:** Delivery dates are not guaranteed. Orders are generally delivered in the most expeditious manner possible. A planned delivery schedule will be provided upon order placement. Change orders placed subsequent to the original PO may delay delivery.
3. **Order placement:** We reserve the right to reject orders that do not contain all quoted products and services except those items indicated in the optional products and services section. For radio programming, please provide radio frequencies at the time of order placement.
4. **Invoicing:** Orders are invoiced only when they are ready for delivery. The only exception to this policy is when the customer requests early billing.
5. **Payment:** 100% payment is due within 30 days of the invoice date. Invoices not paid within 30 days are subject to interest at the rate of 1.5% monthly, and your placement on COD basis for future orders. Early pay discount is not available.
6. **Payment method:** We accept payment by bank transfer (ACH), Check, and Cards (Visa and MasterCard only). Card payments must be processed on the same date that the invoice is generated. Payments made after the invoice date can be made only via ACH or Check.
7. **New Customers:** Credit application and references required for all new customers. Alternatively, you may pay by one of the payment methods above on the date of order delivery.
8. **Shipment FOB:** Global Data Specialists, 1815 W 1st Ave, Suite 110, Mesa, AZ. For Dataradio drop-shipped orders shipment FOB is CalAmp, Waseca, MN.
9. **Shipping charges:** If the quotation includes shipping, handling or delivery fees, it is only an estimate. Actual shipping charges will be determined only at the time of order shipment.
10. **Taxes:** Applicable sales taxes will be added to all orders unless a valid tax exemption certificate is presented at the time of order placement.
11. **Warranty** is specific to the policies of each respective OEM (Original Equipment Manufacturer). No additional warranties are expressed or implied. Please contact us for all warranty and non-warranty repairs with the exception of Dataradio. For Dataradio warranty and non-warranty repairs, call 800-992-7774 x6707. Warranty service includes standard depot repair only, and does not include shipping charges or service calls to remove, repair or reinstall equipment. Emergency repair and swap service costs extra and is subject to parts availability. Warranty labor includes direct in-house labor costs only. If warranty service requires our personnel to travel out of our office, additional time and materials charges will be invoiced separately.
12. **Order cancellation:** The following order cancellation charges shall apply:
 - Prior to 30 days of planned delivery date: 25% of the quoted amount shall be invoiced.
 - Less than 30 days of planned delivery date: 50% of the quoted amount shall be invoiced.
 - After order is ready for delivery: 100% of the quoted amount shall be invoiced.
13. **Contractors:** At our discretion, we will file a pre-lien when required. Please provide full project name and number, project location, and General Contractor and owner information at the time of order placement.
14. **Delinquent pick up:** You will be notified when the order is ready for pick up. Orders not picked up within 7 days of notification date are subject to storage fees of \$25 per unit per day.



1815 W. First Ave., Suite 110, Mesa, AZ 85202
Phone: 480-461-3401 FAX: 480-461-3411

QUOTE: **MDM04063C** **September 27, 2011**
by Duane Moody
480-461-3401, Ext. 223, duane@gbl-data.com
Expires 26-Dec-11

Quoted To: **Mike Loggins, James Wilson, Andy Haas**

Arizona Water
3805 N. Black Canyon Hwy.
Phoenix, AZ 85015
Phone: 602-240-6860
FAX: 602-240-6878

End User: **Arizona Water System, Narrow Band Upgrade**

Description

Global Data Specialists is pleased to provide you with the following Budgetary quotation for the Narrow Banding Upgrade for your Motorola SCADA system.

The quote includes any installation/electrical charges associated with installing any new ACE3600 RTU's and the removal of old equipment.

Engineering services are also included for the reprogramming of the RTU's as needed.

Electrical Installation Scope of Work

- A. Furnish control technician to de-terminate all associated field wiring to existing Motorola RTU.
- B. Vacuum and wipe down cabinet (where applicable) for new RTU.
- C. Install new Motorola RTU, provided by Global Data Specialists.
- D. Reconnect existing wiring to new RTU and label.
- E. Test signals back to new RTU and verify functionality.
- F. Scope is typical for multiple locations.

1. Permitting, Construction, and Demolition

- a. All work performed will conform to NEC requirements and requirements of the Authorities having Jurisdiction to assure a code compliant facility.
- b. Demolish and dispose of existing equipment and materials in accordance with approved drawings.
- c. Furnish trash containers and sanitary facilities so as to provide a clean and sanitary work site.
- d. Provide grounding, lighting, power distribution, and instrumentation construction services in accordance with approved plans and specifications.

2. Exclusions and Clarifications

- a. Proposal is based on re-using existing wiring and devices.
- b. Delays or additional work that are found as a result of existing field conditions, may require a change order.
- c. Only work, equipment, and materials explicitly stated in this document are part of this proposal. Electrician accepts the responsibility for the coordination and furnishing of small and incidental equipment and services normally associated with this type of work and for coordination with other disciplines. Any additional significant equipment, materials, or services will be furnished only upon execution of a change order.
- d. All other equipment and services not specifically mentioned in this scope of work nor defined above shall be the responsibility of others.
- e. This proposal is based upon electrician executing their work in reasonable coordination with other disciplines and entities. Additional electrician costs due to significant or extraordinary delays by others will be grounds for change orders.

3. Taxes and Freight

- a. Taxes are not included in this proposal. Upon request, electrician will furnish an estimate of taxes for this work. Owner to furnish electrician with tax exempt information.
- b. Unless noted differently, this proposal includes freight cost for delivery of electrician manufactured products to the project site.
- c. Unless noted differently, freight cost for equipment shipped FOB manufacturer's facility or FOB port-of-entry is not included in this proposal.

4. Warranty:

- a. The warranty period for electrician manufactured electrical and control equipment is 18 months from ship date or 12 months from startup date. During this period, electrician will repair or replace at no cost to owner any failed component or system.
- b. Unless noted differently, electrician will honor a manufacturer's warranty for all purchased equipment and will coordinate with the manufacturer to repair or replace the equipment in accordance with the manufacturer's warranty.
- c. The electrician warranty covers only electrician furnished equipment and explicitly excludes all costs of lost production, loss of facility availability, and any and all other incidental costs.
- d. Electrician will make every effort to honor the warranty in a timely manner. Delays in getting parts or equipment from manufacturers may affect the time to implement repairs or replacement.

If you have any questions or need additional information please let me know.

Also please note that tax and shipping has not been included in this proposal.

Best Regards,

Duane Moody
Sales Manager

ENGINEERING SERVICES

Configuration, FIU and RTU Applications

The System Engineer will configure the FIU and RTU applications according to the system requirements.

Integration, On-site at Customer Location

- Test communications and operation between OIT and RTU
- Test and Debug as needed
- Conduct operator training on OIT
- Obtain signoff and acceptance

Engineering Services Sub-Total \$ 6,525.00

MATERIALS

Office FIU: \$ 6,489.00

QTY	Part No	Description	Unit Price	Extended
0001	F7500	ACE3600 SYSTEM TOOL SUITE		
			\$ 500.00	\$ 500.00

ACE3600 software tools environment for system building and maintenance. Includes installation CD and RS-232 PC to RTU cable.

0001	GD5677-ACE	ACE3600 RTU/FIU Application Program		
			\$ 2,600.00	\$ 2,600.00
0001	F7509	ACE3600 BASIC MODEL NO RADIO		
			\$ 1,150.00	\$ 1,150.00
0001	V102	ADD: 2 I/O SLOTS FRAME		
			\$ 50.00	\$ 50.00
0001	V228	ADD: 50X50 CM PAINTED METAL HOUSING		
			\$ 300.00	\$ 300.00
0001	V118	ADD: 4 AO MODULE		
			\$ 495.00	\$ 495.00
0001	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER		
			\$ 310.00	\$ 310.00
0001	V328	ADD: 10 AH BACKUP BATTERY		
			\$ 207.00	\$ 207.00
0001	FRN5769	SHARED RADIO INTERFACE		
			\$ 622.00	\$ 622.00
0001	GD3572-4AO	4 AO I/O Interface Kit		
			\$ 255.00	\$ 255.00

Valley Vista System RTU's: \$ 14,428.00

QTY	Part No	Description	Unit Price	Extended
0004	F7563	ACE3600 WITH CDM750 136-174 MHZ		
			\$ 1,850.00	\$ 7,400.00

The model default includes CDM750 136-174 MHz radio, radio installation kit, PS 12V DC, CPU3640 ,basic frame (no I/O slots) and plug-in radio port for CPU. Must be ordered with Metal chassis or housing option. CDM750 is only shipped to North America at this time

0004	V102	ADD: 2 I/O SLOTS FRAME		
			\$ 50.00	\$ 200.00
0004	V228	ADD: 50X50 CM PAINTED METAL HOUSING		
			\$ 300.00	\$ 1,200.00
0004	V245	ADD: 16DI 4DO EE 4AI +/-20MA		

0004	V261	ADD: AC PS 85-264 V WITH BATTERY CHARGER	\$ 430.00	\$ 1,720.00
0004	V328	ADD: 10 AH BACKUP BATTERY	\$ 310.00	\$ 1,240.00
0004	FPN1653	ASSEMBLY, POWER SUPPLY, 24V PS PLUG IN KIT	\$ 207.00	\$ 828.00
0004	GD3572-Mixed	Mixed I/O Interface Kit	\$ 75.00	\$ 300.00
			\$ 385.00	\$ 1,540.00

OIT Option: \$ 1,550.00

QTY	Part No	Description	Unit Price	Extended
0001	GD5370	Operator Interface Terminal: 5.6 inch Graphic HMI with High-Resolution Analog Touchscreen Color TFT Display. Includes 120VAC to 24 VDC power supply (159mmL x 97mmW x 38mmH), Software, 5ft OIT to PLC communications cable, and 5 pack of protective touch screens. Includes mounting hardware.	\$ 1,550.00	\$ 1,550.00

NOTE: Does not include installation of OIT or power supply, AC power cable/wiring, or power supply to OIT cable/wiring.

Shipping: \$ 325.00

QTY	Part No	Description	Unit Price	Extended
0001	GD7336	Federal Express Ground	\$ 325.00	\$ 325.00

Materials Sub-Total \$ 22,792.00

TOTALS

Engineering Services	\$ 6,525.00
Materials	\$ 22,792.00
TOTAL	\$ 29,317.00

OPTIONAL SERVICES (Not Included in Quote Totals)

Programming and On-Site Integration of OIT \$ 5,760.00

The System Engineer will create the OIT Application Program for the levels and pump set point adjustment of the tank site.

On-Site Integration Includes

- Test communications and operation between OIT and RTU
- Test and Debug as needed
- Conduct operator training on OIT
- Obtain signoff and acceptance

Radio Path Survey \$ 4,365.00

To conduct a radio path survey at all of the RTU sites in the Sedona system to evaluate and determine radio power requirements and optimal path considerations.

OPTIONAL MATERIALS (Not Included in Quote Totals)

QTY	Part No	Description	Unit Price	Extended
0001	Y1503	Antenna, Gold Anodized Directional Yagi 3 Element 7.1 dB Gain VHF 50-174 MHz)	\$ 183.00	\$ 183.00
0001	RG213	RG213 (Cost Per Foot)	\$ 1.15	\$ 1.15
0001	FSJ4-50B	1/2" Superflex (Cost Per Foot)	\$ 3.58	\$ 3.58
0001	GD1555-1	N-Male Connectors (ea) (1/2" Superflex)	\$ 25.00	\$ 25.00
0001	GD1555-2	N-Male Connectors (ea) (RG213)	\$ 6.00	\$ 6.00
0001	GDISB50LN-C2	Polyphaser (N-Male to N-Male) with 2ft Pigtail	\$ 145.00	\$ 145.00
0001	FG1683	Antenna, Fiberglass Omnidirectional 3 dB Gain VHF	\$ 185.00	\$ 185.00
0001	FM2	Mounting Bracket, Heavy Duty for Omni Fiberglass Base Antenna	\$ 30.00	\$ 30.00

Optional Wall Mount Housing for OIT and RTU (Includes mounting of OIT and RTU within enclosure.: \$ 4,642.00

QTY	Part No	Description	Unit Price	Extended
0001	GD3612	Lamax SST Housing (36x24x12), NEMA 4 Wall Mount (Painted Steel) with cutout for OIT. Includes installation and cabling of ACE3600 and OITas well as installation of the I/O interface kit. AC wiring to the OIT power supply is not included.	\$ 4,242.00	\$ 4,242.00

If this option is purchase, (1) V228 50x50cm housing can be deducted from the ACE3600 configuration. A V056 option
ADD: 48 X 48 CM METAL CHASSIS, \$100) will need to be substituted for the V228 option.

0001	GD7336	Shipping	\$ 400.00	\$ 400.00
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TERMS

NOTE 1: Quote does not include shipping.

NOTE 2: Quote does not include taxes.

Payment:..... 100% Upon Receipt of Invoice, Net 30 Days. 1% discount if payment is received Net 15. We also accept Visa, Master Card, and American Express.

Delivery:..... TBD Upon Order Placement

Validity: Quotation is valid for 90 days. The above quotation is based upon the information provided at the time of quotation. Global Data Specialists is not responsible for any information that is missing or incorrect. Any new information that is received after the quotation has been submitted may result in a revised quotation being issued to cover the costs of additional equipment or services as identified.

Shipment:..... Global Data Specialists, Mesa, AZ.

Warranty: The Motorola equipment is warranted for 1 year upon shipment for parts and labor. Non-Motorola equipment warranties are vendor specific and will apply. No additional warranties are expressed or implied. Warranty labor does not include the cost associated with any out of the office related travel or hourly time expenses and will be billed separately.

Cancellation: 10% Penalty prior to 30 days of shipment, 25% Penalty less than 30 days prior to shipment.

Note: Please reference quotation number on all correspondence.



1815 W. First Ave., Suite 110, Mesa, AZ 85202
Phone: 480-461-3401 FAX: 480-461-3411

QUOTE: **MDM03931C**
by Duane Moody
480-461-3401, Ext. 223, duane@gbl-data.com
Expires 07-Sep-11

June 09, 2011

Quoted To: **Andy Haas**
Email: ahaas@azwater.com

Arizona Water
3805 N. Black Canyon Hwy.
Phoenix, AZ 85015
Phone: 602-240-6860
FAX: 602-240-6878

End User: **Valley Vista System**

Description

Global Data Specialists is pleased to provide you with the following BUDGETARY quotation for the Sedona system as per your request. The quote includes as follows:

Replacing the RTUs communicating Intrac protocol at the Sedona Golf Course Resort Tank and 3 associated wells (Rancho Rojo, Sedona Golf Resort Well, and Valley Vista Well) with the Motorola ACE3600. This would also include another FIU at the office with analog output module for interface to a strip chart recorder (currently interfaced to Intrac FIU). The ACE3600 FIU would share the same radio as the current Intrac FIU.

An option for an Operator Interface Terminal (OIT) would be interfaced to the Tank as an option and would include the following:

- a. OIT with software
- b. 120VAC to 24VDC power supply needed for the OIT (159mmLx97mmWx38mmH)
- c. A 5ft comm. cable from the OIT to the PLC
- d. A 5 pack of protective screen covers for the touchscreen
- e. The Engineering Services for programming of the OIT and RTU

NOTE: This Option can also be included with Option 3 below.

This will not include installation of the OIT in the housing/cabinet or AC to power supply or power supply to OIT wiring/cables. A separate housing for the OIT will need to be provided or a larger housing at the Tank may be needed to house the ACE3600 and OIT. A separate housing for installation of the OIT and RTU (wall mount) is included in the Optional Materials.

NOTE 1: The Optional Materials section of the quote lists a VHF Yagi antenna individual price for those sites that may need to be replaced as needed for optimal system operation. Also, please note that any sites requiring new coax cable will be included on the invoice. Coax cable types, with cost per foot, has been included in the Optional Materials section of the proposal. Optional connectors and other items are also included in this section.

NOTE 2: The Optional Services also includes the budgetary estimate for a radio path survey for the RTU sites at Wikiup, Pinewood, Harmony High Point, Sedona Golf Course Resort, and Montezuma Hills Tanks and associated wells/pump sites.. This will also include the central computer FIU. This will also determine the optimal location of the repeater as well as antenna height. The radio path survey is needed to evaluate and determine the radio communications path between the various sites to determine if a 5 watt VHF radio is sufficient or if a higher power radio configuration is required. If a higher power radio is needed, this will also determine if any hardware changes need to be made at the site(s) for larger power supply and larger radio.

NOTE 3: Quotation does not include RTU equipment installation.

To provide cost effective installation of the ACE3600 RTU, Global Data Specialists has created I/O interface kits that can be used for faster and easier installation of the equipment. The kit consists of DIN rail mounted terminal blocks and relay blocks, along with a direct interface connector to the front of the I/O module, and a 3 ft cable. Additional lengths are optional.

These kits have been designed for the Mixed I/O module, 8/16 AI module, 8/16 DO module, 16/32 DI module, 4 AO module, 4AO/8AI module, 16DI FET, 8 DI/8DO FET, 16DO FET, and the 16 DI 120-230V module. Additional modules can be designed upon request.

The kits can be mounted within a wall mount enclosure along with the ACE3600 RTU, or within a separate housing or for outside the enclosure mounting depending upon the site requirements.

In addition, these kits were created for the following issues.

- a. The maximum wire size for the terminals on the ACE3600 I/O modules is 18 ga.
- b. The relays in the DO and Mixed I/O modules do not have a high capacity compared to the MOSCAD RTU's or be able to drive external devices. As a result, interpose relays may need to be required. The interface kit includes relays that provide higher capacity relays than those included with the ACE I/O modules.
- c. The terminals provided with the interface kit allow for easier installation and up to 12ga wiring. The terminals, "linkles" on the I/O modules can be hard to access within the module housing and can be cramped for the wiring to the module. The interface kit terminals can be installed for more readily available access and easier wire routing.

NOTE: The add-on power supply for the DI and AI modules will be needed to provide wetting voltage for the DI's and the AI loop power.

If you have any questions or need additional information please let me know.

Best Regards,

Duane Moody
Sales Manager